

## PROJECT REPORT

**SITE NAME:** Bayonne Barrel and Drum Site  
TDD #: 02-98-09-0023  
DCN #: START-02-F-03295

**EPA I.D. NO.:** E,RS

**PROJECT DATES:** December 14-18, 1998

**1. Site Location:** 150-154 Raymond Boulevard  
Newark, Essex County, New Jersey

**2. Project Description:** Refer to Table 1 for Static Water Level Data and Table 2 for Groundwater Elevations

**3. On-Site Personnel:**

<u>Name</u>	<u>Affiliation</u>	<u>Duties on Site</u>
John F. Brennan	START II	Project Manager
Keith Olinger	START II	Datalogger Installation
Anthony Vandeven	START II	Datalogger Collection

**4. Project Notes / Site Background:**

START was tasked by the Environmental Protection Agency (EPA) to determine groundwater flow direction at the Bayonne Barrel & Drum Site. In addition, START was asked to make a determination as to whether the groundwater was tidally influenced. These events were to follow the sampling of the eleven monitoring wells on site, which took place the week of November 29, 1998.

The site is located at 150 - 154 Raymond Boulevard in Newark, New Jersey, and occupies approximately 15 acres of Block 5002, Lots 3 and 14. The site is bounded by Raymond Boulevard and an exit ramp from Routes 1 and 9 to the north and west respectively; an entrance ramp to the New Jersey Turnpike to the east and the south; and a movie theater parking lot to the southwest. Topographically, the site is relatively flat with a slight undulating slope toward the east and northeast. Elevations on the property range from 5 to 20 feet above sea level. Several buildings remain on the property which were formerly utilized for drum reconditioning. The area on and around the site was once a tidal wetland (flood plain of the Passaic River). Therefore, most of the soil present at the site and surrounding properties consists of historic fill material. These fill materials include fill associated with the former City of Newark landfill and bottom ash from a power plant.

**5. Project Summary:**

START activities were conducted on-site from December 14-18, 1998. The following is a summary of the events that took place.

**A. TIDAL INFLUENCE**

START was tasked by the EPA to determine whether the groundwater at the Bayonne Barrel & Drum Site was tidally influenced. The EPA originally requested a 24-hour static water level survey to complete this determination. However, since the site is also under the review of the New Jersey Department of Environmental Protection (NJDEP), START recommended that the static water levels be recorded for at least a 71-hour period as per the Technical Requirements For Site Remediation (N.J.A.C. 7:26E-4.4(h)3ii(3)). START collected data from the monitoring wells for a 96-hour period to insure that an accurate picture of the groundwater's static water level could be drawn. The On-Scene Coordinator agreed with this change.

**Static Water Level Determination**

Five of the eleven monitoring wells on-site were chosen for the static water level survey. Monitoring wells WELL-A, MW-29WA, and 2614920 were chosen so that the water level data could also be used to triangulate the groundwater flow direction. Monitoring wells LB-MW3 (shallow) and BBD-C3 (deep) were chosen so that a comparison could be drawn between the movement of the groundwater in a deep and a shallow monitoring well.

**TABLE 1  
STATIC WATER LEVEL DATA**

Monitoring Well ID	Depth to Water (TIC) at Test Initiation (feet)	Depth of Well (feet)
BBD-C3	5.64	46.75
WELL-A	8.59	19.5
2614920	11.92	19.58
29-WA	9.40	17.0
LB-MW3	4.17	12.7

The static water level determination was conducted during the week of December 14, 1998. The weather for that week was fair, with the exception of Thursday, December 17, 1998, when there were a few light rain showers. The total precipitation for that day as measured at Newark Airport was 0.02 inches, which also happened to be the total precipitation level for the entire study period. To put this in perspective, during the month of December 1998, a total of 1.03 inches of precipitation (water equivalents) was recorded at Newark Airport. Attachment H lists the precipitation levels for December 1998 on an hourly basis. In-Situ SP-4000 "Troll" Dataloggers were used to record the static water levels of each monitoring well every 0.5 hour. Data was collected from 1030 Monday, December 14, to 1030 Friday, December 18, 1998. The dataloggers were locked in each monitoring well and left on-site for the full survey period. START returned to the site on Friday, December 18, 1998, to download the data and collect the dataloggers. The tabulated data for the five monitoring wells surveyed can be found in Attachment A.

The following is an analysis of the static water level data collected:

#### Monitoring Wells: BBD-C3, WELL-A, 2614920

The data collected from monitoring wells BBD-C3, WELL-A, and 2614920 was very similar. This data is graphically illustrated in Attachments B and C\*. Analysis of the graphs presented in Attachment C illustrates that the water levels at all three monitoring wells changed (increased/decreased) in a relatively similar pattern. In general, the water level decreased for the first 16 hours, and then steadily increased until about 80 hours at which point the water level sharply decreased for the remainder of the measurement period. The maximum and minimum static water levels for each of the three monitoring wells can be found in Table 2. The maximum total change for any of the three monitoring wells was approximately 0.3 feet, or 4 inches from start to finish.

\*Note - Attachment B includes all of the data points collected at the Bayonne Barrel and Drum Site the week of December 14, 1998, graphically plotted on a time versus static water level scale. Some of these graphs list more than a 96-hour period. The reason for this is that the dataloggers were started at different times (the software allowed for only one datalogger to be installed at a time). The common 96-hour study period for all of the dataloggers was 1030 Monday to 1030 Friday. This data is graphically listed in Attachment C (Test Data) and gives a more representative picture of the changing static water levels in all of the monitoring wells.

#### Monitoring Wells: LB-MW3, MW-29WA

The data collected from monitoring well MW-29WA showed virtually no change in static water level (flat line). The static water levels collected from monitoring well LB-MW3 changed slightly, but did not follow the trends found in monitoring wells BBD-C3, WELL-A, 2614920. The static water level changes for all of the monitoring wells can be found in Table 2. Unfortunately, the scattered data did not allow for any correlation to be drawn between the BBD-C3 (deep well) and the LB-MW3 (shallow well).

**TABLE 2**  
**DATALOG TEST DATA**

Monitoring Well ID	Depth to Water (TIC) at Test Initiation (feet) 12/14/98 @ 1030	Maximum Water Level Change (feet)	Minimum Water Level Change (feet)
BBD-C3	5.64	(+0.148)	(-0.104)
WELL-A*	8.59	(+0.223)	(-0.094)
2614920	11.92	(+0.189)	(-0.067)
29-WA	9.40	(+0.023)	(-0.002)
LB-MW3	4.17	(+0.039)	(-0.113)

\*MW Well-A was tested at 1040 (not 1030) and every 0.5 hour thereafter.

#### **Surrounding Waterways**

Analysis of United States Geological Survey (USGS) 7.5 minute Quadrangle Maps (1981) indicates that the Passaic River is located north and east of the Bayonne Barrel and Drum Site. The Passaic River flows eastward passing approximately 0.5 miles from the site's northern border, then turns south and flows approximately 0.5 miles from the eastern border of the site. Eventually, the river empties into Newark Bay, less than 2 miles southeast of the site.

#### **Daily Tidal Data**

Predicted daily tidal data was collected for the week of December 14, 1998, and is presented in Attachment F. The data was obtained from the National Oceanic and Atmospheric Administration (NOAA). The data is from a location (Gregory Avenue Bridge) located upstream on the Passaic River, approximately ten miles north of the Bayonne Barrel and Drum Site.

The predicted high and low tide times for each day were compared to the static water level data generated at the Bayonne Barrel and Drum Site.

## **Final Determination**

Based on all of the existing data, it does not appear as if the monitoring wells located at the Bayonne Barrel and Drum Site are tidally influenced. The maximum change in static water level for any of the five monitoring wells studied was just 0.3 feet, whereas the tidal fluctuation of the nearby river is more than 5 feet. The tidal fluctuation noted at the Gregory Avenue Bridge correlates well to tidal datums collected by NOAA at Point No Point, on the Passaic River (Attachment I). This collection point is located less than a mile east of the site. The predicted tidal data for a location 10 miles north of the site (Gregory Avenue Bridge) does not correlate well with the static water level changes recorded for any of the monitoring wells studied. In addition, none of the data collected at the Bayonne Barrel and Drum Site followed any of the traditional synoptic tidal patterns.

Based on a review of the observations at Point No Point, the predicted data at the Gregory Avenue Bridge and the proximity of the Passaic River to the site, one may theorize that the site in some manner must be tidally influenced. However, the data collected during this study did not produce any evidence to support this theory. One possible explanation may be the depth of the monitoring wells on-site. All of the monitoring wells are relatively shallow (see Table 1), with the deepest well ending at 46.75 feet. This may not be deep enough to show the effects of the tidal fluctuation. Nonetheless, for the purposes of this study, the author must conclude that the monitoring wells located at the Bayonne Barrel and Drum Site are not significantly tidally influenced.

## **B. GROUNDWATER FLOW DIRECTION**

The data collected during the static water level investigation was used to determine general groundwater flow direction across the site. Three of the monitoring wells investigated were pre-chosen for this purpose (2614920, WELL-A, and MW-29WA). However, analysis of the data indicated that the static water level of monitoring well MW-29WA did not change during the 96-hour investigation, relative to the movement in the other monitoring wells. This could be due to excessive sedimentation of the well screen or the local presence of finer-grained soils at that location. Therefore, the data collected from monitoring well MW-29WA was discarded for flow direction determination purposes. The data collected from monitoring well BBD-C3 was used instead. The location of monitoring well BBD-C3 still allowed for groundwater flow direction determination via triangulation.

The groundwater elevations of the three monitoring wells used in the flow direction determination are listed in Table 3 below. The groundwater elevations were determined using the static water level data collected during the week of December 14, 1998, and the survey data which was collected by Summit Drilling Company, Inc. The survey data is listed in Attachment D.

For groundwater flow direction determination, the static water level data collected at 1200 on Monday, December 14, 1998, was used. This allowed each well at least 1.5 hours to acclimate to the placement of the datalogger (the manual recommends 1.0 hour). Table 3 illustrates that for the three monitoring wells used, the flow direction would not change significantly if it was measured (at 1200) on any of the other days on which data was collected. All three of the wells changed relatively uniformly during the 96-hour measuring period.

From the groundwater elevation data, a groundwater contour map was created. This map was created using Surfer v6.0 (Golden Software, Inc.) and can be found in Attachment G. The groundwater elevations were calculated by subtracting the Depth to Water (DTW) for each monitoring well from the Monitoring Well Elevation measured at the top of the PVC (inner) casing. Groundwater generally flows perpendicular to the contours, from a higher to a lower gradient. Analysis of the groundwater flow contours across the Bayonne Barrel & Drum Site indicates that general groundwater flow is northeast, toward the Passaic River.

**TABLE 3**  
**GROUNDWATER ELEVATIONS**  
**BAYONNE BARREL & DRUM SITE**

Monitoring Well ID	BBD-C3	WELL-A	MW-2614920
<b>Groundwater Elevation</b>	<b>2.58'</b>	<b>2.87'</b>	<b>2.76'</b>
<b>12/14/98 1200</b>			
<b>Groundwater Elevation</b>	<b>2.61'</b>	<b>2.93'</b>	<b>2.79'</b>
<b>12/15/98 1200</b>			
<b>24 Hour Change</b>	<b>+0.03'</b>	<b>+0.06'</b>	<b>+0.03'</b>
<b>Groundwater Elevation</b>	<b>2.72'</b>	<b>3.05'</b>	<b>2.9'</b>
<b>12/16/98 1200</b>			
<b>24 Hour Change</b>	<b>+0.11'</b>	<b>+0.12'</b>	<b>+0.11'</b>
<b>48 Hour Change</b>	<b>+0.14'</b>	<b>+0.18'</b>	<b>+0.14'</b>
<b>Groundwater Elevation</b>	<b>2.78'</b>	<b>3.09'</b>	<b>2.93'</b>
<b>12/17/98 1200</b>			
<b>24 Hour Change</b>	<b>+0.06'</b>	<b>+0.04'</b>	<b>+0.03'</b>
<b>72 Hour Change</b>	<b>+0.20</b>	<b>+0.22</b>	<b>+0.17</b>

\*Note - Groundwater Elevation is calculated by subtracting the Depth to Water (DTW) from the Monitoring Well Elevation measured at the top of the PVC (inner) casing

**5. Report Prepared by:**

John F. Brennan  
John F. Brennan, START

Date: 2/29/89

**6. Report Reviewed by:**

Thomas O'Neill  
Thomas O'Neill, START Group Leader

Date: 3/2/89

**LIST OF ATTACHMENTS**

**ATTACHMENT A - TABULATED DATA**

**ATTACHMENT B - PLOTTED DATA**

**ATTACHMENT C - TEST DATA**

**ATTACHMENT D - SITE LOCATION PLAN**

**ATTACHMENT E - MONITORING WELL LOCATION DATA**

**ATTACHMENT F - PASSAIC RIVER TIDAL DATA  
GREGORY AVENUE BRIDGE**

**ATTACHMENT G - GROUNDWATER CONTOUR MAP**

**ATTACHMENT H - UNEDITED HOURLY PRECIPITATION DATA  
&  
UNEDITED LOCAL CLIMATOLOGICAL DATA  
DECEMBER 1998  
(NEWARK AIRPORT STATION)**

**ATTACHMENT I - PASSAIC RIVER TIDAL DATUM  
POINT NO POINT**

**ATTACHMENT A**  
**TABULATED DATA**

IN SITU INC. TROLL  
Serial number: 00001221  
Unit name: WELL-A

Report generated: 12/22/98 13:03:45  
Report from file: A:\WELLA.BIN

Test name: test 1

Test defined on: 12/14/98 08:51:14  
Test scheduled for: 12/14/98 09:10:00  
Test started on: 12/14/98 09:10:00  
Test stopped on: 12/18/98 10:29:40  
Test extracted on: 12/18/98 10:30:59

Data gathered using Linear testing

Time between data points: 30.0000 Minutes.  
Number of data samples: 195

Channel number [2]

Measurement type: Pressure/Level  
Channel name: well-a  
Specific gravity: 1.000  
Mode: Surface  
User-defined reference: 0.000 Feet H<sub>2</sub>O  
Referenced on: test start  
Pressure head at reference: 4.593 Feet H<sub>2</sub>O

Channel number [1]

Measurement type: Temperature  
Channel name: well-a

Date	Time	ET (min)	Channel[2] Feet H <sub>2</sub> O	Channel[1] Celsius
12/14/98	09:10:00	0.0000	0.000	16.12
12/14/98	09:40:00	30.0000	0.002	15.97
12/14/98	10:10:00	60.0000	0.002	15.99
12/14/98	10:40:00	90.0000	0.012	16.02
12/14/98	11:10:00	120.0000	0.016	16.01
12/14/98	11:40:00	150.0000	0.023	16.02
12/14/98	12:10:00	180.0000	0.023	16.02

12/14/98	12:40:00	210.0000	0.021	16.03
12/14/98	13:10:00	240.0000	0.021	16.03
12/14/98	13:40:00	270.0000	0.014	16.03
12/14/98	14:10:00	300.0000	0.021	16.03
12/14/98	14:40:00	330.0000	0.018	16.03
12/14/98	15:10:00	360.0000	0.007	16.02
12/14/98	15:40:00	390.0000	-0.002	16.03
12/14/98	16:10:00	420.0000	-0.012	16.04
12/14/98	16:40:00	450.0000	-0.016	16.03
12/14/98	17:10:00	480.0000	-0.025	16.04
12/14/98	17:40:00	510.0000	-0.021	16.02
12/14/98	18:10:00	540.0000	-0.021	16.04
12/14/98	18:40:00	570.0000	-0.030	16.04
12/14/98	19:10:00	600.0000	-0.032	16.03
12/14/98	19:40:00	630.0000	-0.032	16.03
12/14/98	20:10:00	660.0000	-0.028	16.04
12/14/98	20:40:00	690.0000	-0.028	16.03
12/14/98	21:10:00	720.0000	-0.037	16.03
12/14/98	21:40:00	750.0000	-0.037	16.03
12/14/98	22:10:00	780.0000	-0.037	16.03
12/14/98	22:40:00	810.0000	-0.044	16.03
12/14/98	23:10:00	840.0000	-0.039	16.03
12/14/98	23:40:00	870.0000	-0.035	16.03
12/15/98	00:10:00	900.0000	-0.035	16.04
12/15/98	00:40:00	930.0000	-0.030	16.03
12/15/98	01:10:00	960.0000	-0.028	16.03
12/15/98	01:40:00	990.0000	-0.025	16.03
12/15/98	02:10:00	1020.0000	-0.030	16.03
12/15/98	02:40:00	1050.0000	-0.025	16.02
12/15/98	03:10:00	1080.0000	-0.018	16.03
12/15/98	03:40:00	1110.0000	-0.014	16.04
12/15/98	04:10:00	1140.0000	-0.007	16.03
12/15/98	04:40:00	1170.0000	0.000	16.03
12/15/98	05:10:00	1200.0000	0.002	16.03
12/15/98	05:40:00	1230.0000	0.005	16.03
12/15/98	06:10:00	1260.0000	0.002	16.03
12/15/98	06:40:00	1290.0000	0.000	16.03
12/15/98	07:10:00	1320.0000	-0.002	16.02
12/15/98	07:40:00	1350.0000	-0.005	16.02
12/15/98	08:10:00	1380.0000	-0.002	16.03
12/15/98	08:40:00	1410.0000	-0.002	16.02
12/15/98	09:10:00	1440.0000	0.007	16.02
12/15/98	09:40:00	1470.0000	0.009	16.02

12/15/98	10:10:00	1500.0000	0.018	16.03
12/15/98	10:40:00	1530.0000	0.035	16.02
12/15/98	11:10:00	1560.0000	0.051	16.02
12/15/98	11:40:00	1590.0000	0.065	16.02
12/15/98	12:10:00	1620.0000	0.078	16.02
12/15/98	12:40:00	1650.0000	0.095	16.01
12/15/98	13:10:00	1680.0000	0.095	16.02
12/15/98	13:40:00	1710.0000	0.097	16.02
12/15/98	14:10:00	1740.0000	0.104	16.02
12/15/98	14:40:00	1770.0000	0.106	16.01
12/15/98	15:10:00	1800.0000	0.106	16.01
12/15/98	15:40:00	1830.0000	0.104	16.00
12/15/98	16:10:00	1860.0000	0.101	16.00
12/15/98	16:40:00	1890.0000	0.099	16.00
12/15/98	17:10:00	1920.0000	0.095	16.00
12/15/98	17:40:00	1950.0000	0.090	16.01
12/15/98	18:10:00	1980.0000	0.090	16.01
12/15/98	18:40:00	2010.0000	0.090	16.00
12/15/98	19:10:00	2040.0000	0.092	16.00
12/15/98	19:40:00	2070.0000	0.104	16.01
12/15/98	20:10:00	2100.0000	0.111	16.00
12/15/98	20:40:00	2130.0000	0.106	15.99
12/15/98	21:10:00	2160.0000	0.099	15.99
12/15/98	21:40:00	2190.0000	0.101	16.00
12/15/98	22:10:00	2220.0000	0.099	16.00
12/15/98	22:40:00	2250.0000	0.055	16.00
12/15/98	23:10:00	2280.0000	0.083	15.99
12/15/98	23:40:00	2310.0000	0.097	16.00
12/16/98	00:10:00	2340.0000	0.115	16.00
12/16/98	00:40:00	2370.0000	0.136	16.00
12/16/98	01:10:00	2400.0000	0.131	16.00
12/16/98	01:40:00	2430.0000	0.127	15.99
12/16/98	02:10:00	2460.0000	0.129	15.99
12/16/98	02:40:00	2490.0000	0.131	16.00
12/16/98	03:10:00	2520.0000	0.157	15.99
12/16/98	03:40:00	2550.0000	0.152	15.99
12/16/98	04:10:00	2580.0000	0.152	15.98
12/16/98	04:40:00	2610.0000	0.155	15.98
12/16/98	05:10:00	2640.0000	0.148	15.98
12/16/98	05:40:00	2670.0000	0.159	15.99
12/16/98	06:10:00	2700.0000	0.187	15.98
12/16/98	06:40:00	2730.0000	0.171	15.98
12/16/98	07:10:00	2760.0000	0.150	15.98

12/16/98	07:40:00	2790.0000	0.134	15.98
12/16/98	08:10:00	2820.0000	0.115	15.99
12/16/98	08:40:00	2850.0000	0.120	15.97
12/16/98	09:10:00	2880.0000	0.134	15.97
12/16/98	09:40:00	2910.0000	0.136	15.98
12/16/98	10:10:00	2940.0000	0.152	15.97
12/16/98	10:40:00	2970.0000	0.161	15.97
12/16/98	11:10:00	3000.0000	0.164	15.98
12/16/98	11:40:00	3030.0000	0.173	15.97
12/16/98	12:10:00	3060.0000	0.201	15.96
12/16/98	12:40:00	3090.0000	0.219	15.98
12/16/98	13:10:00	3120.0000	0.221	15.97
12/16/98	13:40:00	3150.0000	0.224	15.97
12/16/98	14:10:00	3180.0000	0.217	15.97
12/16/98	14:40:00	3210.0000	0.212	15.97
12/16/98	15:10:00	3240.0000	0.208	15.97
12/16/98	15:40:00	3270.0000	0.203	15.96
12/16/98	16:10:00	3300.0000	0.208	15.97
12/16/98	16:40:00	3330.0000	0.219	15.96
12/16/98	17:10:00	3360.0000	0.208	15.96
12/16/98	17:40:00	3390.0000	0.196	15.97
12/16/98	18:10:00	3420.0000	0.194	15.95
12/16/98	18:40:00	3450.0000	0.182	15.95
12/16/98	19:10:00	3480.0000	0.178	15.97
12/16/98	19:40:00	3510.0000	0.178	15.96
12/16/98	20:10:00	3540.0000	0.180	15.97
12/16/98	20:40:00	3570.0000	0.194	15.96
12/16/98	21:10:00	3600.0000	0.198	15.96
12/16/98	21:40:00	3630.0000	0.215	15.95
12/16/98	22:10:00	3660.0000	0.205	15.95
12/16/98	22:40:00	3690.0000	0.196	15.95
12/16/98	23:10:00	3720.0000	0.198	15.95
12/16/98	23:40:00	3750.0000	0.196	15.95
12/17/98	00:10:00	3780.0000	0.203	15.95
12/17/98	00:40:00	3810.0000	0.201	15.95
12/17/98	01:10:00	3840.0000	0.205	15.94
12/17/98	01:40:00	3870.0000	0.205	15.95
12/17/98	02:10:00	3900.0000	0.198	15.95
12/17/98	02:40:00	3930.0000	0.196	15.95
12/17/98	03:10:00	3960.0000	0.198	15.94
12/17/98	03:40:00	3990.0000	0.194	15.94
12/17/98	04:10:00	4020.0000	0.201	15.95
12/17/98	04:40:00	4050.0000	0.203	15.96

12/17/98	05:10:00	4080.0000	0.201	15.95
12/17/98	05:40:00	4110.0000	0.203	15.95
12/17/98	06:10:00	4140.0000	0.196	15.94
12/17/98	06:40:00	4170.0000	0.203	15.94
12/17/98	07:10:00	4200.0000	0.194	15.94
12/17/98	07:40:00	4230.0000	0.198	15.94
12/17/98	08:10:00	4260.0000	0.187	15.94
12/17/98	08:40:00	4290.0000	0.191	15.95
12/17/98	09:10:00	4320.0000	0.189	15.94
12/17/98	09:40:00	4350.0000	0.189	15.92
12/17/98	10:10:00	4380.0000	0.194	15.94
12/17/98	10:40:00	4410.0000	0.208	15.94
12/17/98	11:10:00	4440.0000	0.219	15.92
12/17/98	11:40:00	4470.0000	0.231	15.92
12/17/98	12:10:00	4500.0000	0.235	15.94
12/17/98	12:40:00	4530.0000	0.233	15.92
12/17/98	13:10:00	4560.0000	0.233	15.93
12/17/98	13:40:00	4590.0000	0.226	15.93
12/17/98	14:10:00	4620.0000	0.221	15.92
12/17/98	14:40:00	4650.0000	0.205	15.92
12/17/98	15:10:00	4680.0000	0.198	15.92
12/17/98	15:40:00	4710.0000	0.196	15.92
12/17/98	16:10:00	4740.0000	0.189	15.92
12/17/98	16:40:00	4770.0000	0.178	15.94
12/17/98	17:10:00	4800.0000	0.175	15.92
12/17/98	17:40:00	4830.0000	0.171	15.92
12/17/98	18:10:00	4860.0000	0.168	15.92
12/17/98	18:40:00	4890.0000	0.166	15.93
12/17/98	19:10:00	4920.0000	0.164	15.92
12/17/98	19:40:00	4950.0000	0.159	15.92
12/17/98	20:10:00	4980.0000	0.150	15.92
12/17/98	20:40:00	5010.0000	0.145	15.92
12/17/98	21:10:00	5040.0000	0.141	15.92
12/17/98	21:40:00	5070.0000	0.125	15.92
12/17/98	22:10:00	5100.0000	0.120	15.92
12/17/98	22:40:00	5130.0000	0.108	15.92
12/17/98	23:10:00	5160.0000	0.099	15.91
12/17/98	23:40:00	5190.0000	0.095	15.92
12/18/98	00:10:00	5220.0000	0.088	15.91
12/18/98	00:40:00	5250.0000	0.081	15.92
12/18/98	01:10:00	5280.0000	0.069	15.92
12/18/98	01:40:00	5310.0000	0.058	15.92
12/18/98	02:10:00	5340.0000	0.046	15.92

12/18/98	02:40:00	5370.0000	0.042	15.92
12/18/98	03:10:00	5400.0000	0.037	15.92
12/18/98	03:40:00	5430.0000	0.035	15.92
12/18/98	04:10:00	5460.0000	0.030	15.92
12/18/98	04:40:00	5490.0000	0.009	15.93
12/18/98	05:10:00	5520.0000	0.000	15.92
12/18/98	05:40:00	5550.0000	-0.014	15.92
12/18/98	06:10:00	5580.0000	-0.028	15.94
12/18/98	06:40:00	5610.0000	-0.037	15.92
12/18/98	07:10:00	5640.0000	-0.053	15.93
12/18/98	07:40:00	5670.0000	-0.062	15.93
12/18/98	08:10:00	5700.0000	-0.076	15.92
12/18/98	08:40:00	5730.0000	-0.078	15.92
12/18/98	09:10:00	5760.0000	-0.078	15.92
12/18/98	09:40:00	5790.0000	-0.078	15.92
12/18/98	10:10:00	5820.0000	-0.083	15.94

IN\_SITU INC.      TROLL  
Serial number:      00001220  
Unit name:      well-2614920

Report generated: 12/22/98 13:05:58  
Report from file: A:\W2614920.BIN

Test name:test 1

Test defined on: 12/14/98 09:43:40  
Test scheduled for: 12/14/98 10:00:00  
Test started on: 12/14/98 10:00:00  
Test stopped on: 12/18/98 10:47:55  
Test extracted on: 12/18/98 10:48:47

Data gathered using Linear testing

Time between data points: 30.0000 Minutes.  
Number of data samples: 194

Channel number [2]

Measurement type: Pressure/Level  
Channel name: well-2614920  
Specific gravity: 1.000  
Mode: Surface  
User-defined reference: 0.000 Feet H<sub>2</sub>O  
Referenced on: test start  
Pressure head at reference: 3.375 Feet H<sub>2</sub>O

Channel number [1]

Measurement type: Temperature  
Channel name: well-2614920

Date	Time	ET (min)	Channel[2]	Channel[1]
			Feet H <sub>2</sub> O	Celsius
12/14/98	10:00:00	0.0000	0.000	15.14
12/14/98	10:30:00	30.0000	0.005	15.51
12/14/98	11:00:00	60.0000	0.014	15.64
12/14/98	11:30:00	90.0000	0.021	15.65
12/14/98	12:00:00	120.0000	0.023	15.67
12/14/98	12:30:00	150.0000	0.016	15.67
12/14/98	13:00:00	180.0000	0.016	15.68

12/14/98	13:30:00	210.0000	0.014	15.69
12/14/98	14:00:00	240.0000	0.014	15.69
12/14/98	14:30:00	270.0000	0.014	15.69
12/14/98	15:00:00	300.0000	0.007	15.69
12/14/98	15:30:00	330.0000	0.002	15.69
12/14/98	16:00:00	360.0000	-0.007	15.69
12/14/98	16:30:00	390.0000	-0.016	15.69
12/14/98	17:00:00	420.0000	-0.021	15.69
12/14/98	17:30:00	450.0000	-0.021	15.69
12/14/98	18:00:00	480.0000	-0.018	15.69
12/14/98	18:30:00	510.0000	-0.025	15.69
12/14/98	19:00:00	540.0000	-0.028	15.69
12/14/98	19:30:00	570.0000	-0.028	15.69
12/14/98	20:00:00	600.0000	-0.025	15.70
12/14/98	20:30:00	630.0000	-0.023	15.69
12/14/98	21:00:00	660.0000	-0.032	15.69
12/14/98	21:30:00	690.0000	-0.039	15.69
12/14/98	22:00:00	720.0000	-0.035	15.69
12/14/98	22:30:00	750.0000	-0.039	15.69
12/14/98	23:00:00	780.0000	-0.042	15.69
12/14/98	23:30:00	810.0000	-0.032	15.69
12/15/98	00:00:00	840.0000	-0.039	15.69
12/15/98	00:30:00	870.0000	-0.035	15.69
12/15/98	01:00:00	900.0000	-0.032	15.69
12/15/98	01:30:00	930.0000	-0.028	15.69
12/15/98	02:00:00	960.0000	-0.035	15.69
12/15/98	02:30:00	990.0000	-0.025	15.69
12/15/98	03:00:00	1020.0000	-0.025	15.69
12/15/98	03:30:00	1050.0000	-0.018	15.69
12/15/98	04:00:00	1080.0000	-0.016	15.69
12/15/98	04:30:00	1110.0000	-0.009	15.69
12/15/98	05:00:00	1140.0000	-0.009	15.69
12/15/98	05:30:00	1170.0000	-0.007	15.69
12/15/98	06:00:00	1200.0000	-0.009	15.69
12/15/98	06:30:00	1230.0000	-0.016	15.69
12/15/98	07:00:00	1260.0000	-0.012	15.69
12/15/98	07:30:00	1290.0000	-0.012	15.69
12/15/98	08:00:00	1320.0000	-0.018	15.69
12/15/98	08:30:00	1350.0000	-0.014	15.69
12/15/98	09:00:00	1380.0000	-0.009	15.69
12/15/98	09:30:00	1410.0000	-0.002	15.69
12/15/98	10:00:00	1440.0000	0.000	15.69
12/15/98	10:30:00	1470.0000	0.016	15.69

12/15/98	11:00:00	1500.0000	0.025	15.69
12/15/98	11:30:00	1530.0000	0.037	15.69
12/15/98	12:00:00	1560.0000	0.048	15.69
12/15/98	12:30:00	1590.0000	0.058	15.69
12/15/98	13:00:00	1620.0000	0.060	15.69
12/15/98	13:30:00	1650.0000	0.062	15.69
12/15/98	14:00:00	1680.0000	0.069	15.69
12/15/98	14:30:00	1710.0000	0.074	15.69
12/15/98	15:00:00	1740.0000	0.069	15.69
12/15/98	15:30:00	1770.0000	0.072	15.69
12/15/98	16:00:00	1800.0000	0.069	15.69
12/15/98	16:30:00	1830.0000	0.072	15.69
12/15/98	17:00:00	1860.0000	0.065	15.69
12/15/98	17:30:00	1890.0000	0.062	15.69
12/15/98	18:00:00	1920.0000	0.062	15.69
12/15/98	18:30:00	1950.0000	0.062	15.69
12/15/98	19:00:00	1980.0000	0.065	15.69
12/15/98	19:30:00	2010.0000	0.074	15.69
12/15/98	20:00:00	2040.0000	0.083	15.69
12/15/98	20:30:00	2070.0000	0.081	15.69
12/15/98	21:00:00	2100.0000	0.072	15.69
12/15/98	21:30:00	2130.0000	0.074	15.69
12/15/98	22:00:00	2160.0000	0.067	15.69
12/15/98	22:30:00	2190.0000	0.055	15.69
12/15/98	23:00:00	2220.0000	0.067	15.69
12/15/98	23:30:00	2250.0000	0.072	15.69
12/16/98	00:00:00	2280.0000	0.083	15.69
12/16/98	00:30:00	2310.0000	0.097	15.69
12/16/98	01:00:00	2340.0000	0.104	15.69
12/16/98	01:30:00	2370.0000	0.097	15.69
12/16/98	02:00:00	2400.0000	0.101	15.69
12/16/98	02:30:00	2430.0000	0.099	15.69
12/16/98	03:00:00	2460.0000	0.118	15.69
12/16/98	03:30:00	2490.0000	0.122	15.69
12/16/98	04:00:00	2520.0000	0.113	15.69
12/16/98	04:30:00	2550.0000	0.115	15.69
12/16/98	05:00:00	2580.0000	0.118	15.68
12/16/98	05:30:00	2610.0000	0.120	15.68
12/16/98	06:00:00	2640.0000	0.138	15.68
12/16/98	06:30:00	2670.0000	0.141	15.68
12/16/98	07:00:00	2700.0000	0.127	15.69
12/16/98	07:30:00	2730.0000	0.108	15.69
12/16/98	08:00:00	2760.0000	0.092	15.69

12/16/98	08:30:00	2790.0000	0.095	15.68
12/16/98	09:00:00	2820.0000	0.095	15.69
12/16/98	09:30:00	2850.0000	0.111	15.67
12/16/98	10:00:00	2880.0000	0.120	15.68
12/16/98	10:30:00	2910.0000	0.122	15.68
12/16/98	11:00:00	2940.0000	0.127	15.68
12/16/98	11:30:00	2970.0000	0.138	15.68
12/16/98	12:00:00	3000.0000	0.157	15.67
12/16/98	12:30:00	3030.0000	0.168	15.68
12/16/98	13:00:00	3060.0000	0.168	15.68
12/16/98	13:30:00	3090.0000	0.166	15.68
12/16/98	14:00:00	3120.0000	0.168	15.68
12/16/98	14:30:00	3150.0000	0.168	15.68
12/16/98	15:00:00	3180.0000	0.161	15.68
12/16/98	15:30:00	3210.0000	0.161	15.67
12/16/98	16:00:00	3240.0000	0.168	15.67
12/16/98	16:30:00	3270.0000	0.173	15.68
12/16/98	17:00:00	3300.0000	0.173	15.68
12/16/98	17:30:00	3330.0000	0.164	15.67
12/16/98	18:00:00	3360.0000	0.155	15.68
12/16/98	18:30:00	3390.0000	0.152	15.67
12/16/98	19:00:00	3420.0000	0.145	15.67
12/16/98	19:30:00	3450.0000	0.148	15.67
12/16/98	20:00:00	3480.0000	0.148	15.67
12/16/98	20:30:00	3510.0000	0.157	15.67
12/16/98	21:00:00	3540.0000	0.157	15.67
12/16/98	21:30:00	3570.0000	0.173	15.67
12/16/98	22:00:00	3600.0000	0.171	15.67
12/16/98	22:30:00	3630.0000	0.161	15.67
12/16/98	23:00:00	3660.0000	0.164	15.67
12/16/98	23:30:00	3690.0000	0.161	15.67
12/17/98	00:00:00	3720.0000	0.166	15.67
12/17/98	00:30:00	3750.0000	0.173	15.67
12/17/98	01:00:00	3780.0000	0.164	15.67
12/17/98	01:30:00	3810.0000	0.168	15.67
12/17/98	02:00:00	3840.0000	0.166	15.67
12/17/98	02:30:00	3870.0000	0.159	15.67
12/17/98	03:00:00	3900.0000	0.164	15.67
12/17/98	03:30:00	3930.0000	0.161	15.67
12/17/98	04:00:00	3960.0000	0.164	15.67
12/17/98	04:30:00	3990.0000	0.166	15.67
12/17/98	05:00:00	4020.0000	0.173	15.67
12/17/98	05:30:00	4050.0000	0.168	15.67

12/17/98	06:00:00	4080.0000	0.168	15.67
12/17/98	06:30:00	4110.0000	0.166	15.67
12/17/98	07:00:00	4140.0000	0.161	15.67
12/17/98	07:30:00	4170.0000	0.164	15.67
12/17/98	08:00:00	4200.0000	0.161	15.67
12/17/98	08:30:00	4230.0000	0.159	15.67
12/17/98	09:00:00	4260.0000	0.161	15.67
12/17/98	09:30:00	4290.0000	0.161	15.67
12/17/98	10:00:00	4320.0000	0.164	15.67
12/17/98	10:30:00	4350.0000	0.171	15.67
12/17/98	11:00:00	4380.0000	0.180	15.67
12/17/98	11:30:00	4410.0000	0.189	15.67
12/17/98	12:00:00	4440.0000	0.191	15.67
12/17/98	12:30:00	4470.0000	0.194	15.67
12/17/98	13:00:00	4500.0000	0.191	15.67
12/17/98	13:30:00	4530.0000	0.187	15.67
12/17/98	14:00:00	4560.0000	0.182	15.67
12/17/98	14:30:00	4590.0000	0.175	15.67
12/17/98	15:00:00	4620.0000	0.168	15.67
12/17/98	15:30:00	4650.0000	0.168	15.67
12/17/98	16:00:00	4680.0000	0.161	15.67
12/17/98	16:30:00	4710.0000	0.159	15.67
12/17/98	17:00:00	4740.0000	0.150	15.67
12/17/98	17:30:00	4770.0000	0.148	15.67
12/17/98	18:00:00	4800.0000	0.145	15.66
12/17/98	18:30:00	4830.0000	0.143	15.67
12/17/98	19:00:00	4860.0000	0.141	15.67
12/17/98	19:30:00	4890.0000	0.136	15.66
12/17/98	20:00:00	4920.0000	0.131	15.67
12/17/98	20:30:00	4950.0000	0.125	15.67
12/17/98	21:00:00	4980.0000	0.122	15.67
12/17/98	21:30:00	5010.0000	0.113	15.66
12/17/98	22:00:00	5040.0000	0.106	15.67
12/17/98	22:30:00	5070.0000	0.101	15.67
12/17/98	23:00:00	5100.0000	0.092	15.66
12/17/98	23:30:00	5130.0000	0.090	15.66
12/18/98	00:00:00	5160.0000	0.083	15.66
12/18/98	00:30:00	5190.0000	0.078	15.66
12/18/98	01:00:00	5220.0000	0.069	15.66
12/18/98	01:30:00	5250.0000	0.062	15.66
12/18/98	02:00:00	5280.0000	0.055	15.66
12/18/98	02:30:00	5310.0000	0.048	15.66
12/18/98	03:00:00	5340.0000	0.044	15.66

12/18/98	03:30:00	5370.0000	0.039	15.66
12/18/98	04:00:00	5400.0000	0.035	15.66
12/18/98	04:30:00	5430.0000	0.023	15.66
12/18/98	05:00:00	5460.0000	0.012	15.66
12/18/98	05:30:00	5490.0000	0.005	15.66
12/18/98	06:00:00	5520.0000	-0.007	15.66
12/18/98	06:30:00	5550.0000	-0.018	15.66
12/18/98	07:00:00	5580.0000	-0.030	15.66
12/18/98	07:30:00	5610.0000	-0.039	15.66
12/18/98	08:00:00	5640.0000	-0.048	15.66
12/18/98	08:30:00	5670.0000	-0.053	15.66
12/18/98	09:00:00	5700.0000	-0.055	15.66
12/18/98	09:30:00	5730.0000	-0.058	15.66
12/18/98	10:00:00	5760.0000	-0.060	15.66
12/18/98	10:30:00	5790.0000	-0.062	15.66

IN\_SITU INC. TROLL  
Serial number: 00000645  
Unit name: Well-bbdc3

Report generated: 12/22/98 13:05:12  
Report from file: A:\WBBDC3.BIN

Test name:test 1

Test defined on: 12/14/98 10:09:06  
Test scheduled for: 12/14/98 10:30:00  
Test started on: 12/14/98 10:30:00  
Test stopped on: 12/18/98 11:32:16  
Test extracted on: 12/18/98 11:33:17

Data gathered using Linear testing

Time between data points: 30.0000 Minutes.  
Number of data samples: 195

Channel number [1]

Measurement type: Temperature  
Channel name: well-bbdc3

Channel number [2]

Measurement type: Pressure/Level  
Channel name: well-bbdc3  
Specific gravity: 1.000  
Mode: Surface  
User-defined reference: 0.000 Feet H<sub>2</sub>O  
Referenced on: test start  
Pressure head at reference: 5.172 Feet H<sub>2</sub>O

Date	Time	ET (min)	Channel[1]	Channel[2]
			Celsius	Feet H <sub>2</sub> O
12/14/98	10:30:00	0.0000	14.97	0.000
12/14/98	11:00:00	30.0000	15.05	0.007
12/14/98	11:30:00	60.0000	15.13	-0.046
12/14/98	12:00:00	90.0000	15.12	-0.051
12/14/98	12:30:00	120.0000	15.09	-0.051
12/14/98	13:00:00	150.0000	15.12	-0.053
12/14/98	13:30:00	180.0000	15.11	-0.055

12/14/98	14:00:00	210.0000	15.14	-0.058
12/14/98	14:30:00	240.0000	15.14	-0.058
12/14/98	15:00:00	270.0000	15.13	-0.062
12/14/98	15:30:00	300.0000	15.15	-0.069
12/14/98	16:00:00	330.0000	15.12	-0.074
12/14/98	16:30:00	360.0000	15.18	-0.076
12/14/98	17:00:00	390.0000	15.13	-0.083
12/14/98	17:30:00	420.0000	15.16	-0.081
12/14/98	18:00:00	450.0000	15.17	-0.078
12/14/98	18:30:00	480.0000	15.16	-0.083
12/14/98	19:00:00	510.0000	15.16	-0.085
12/14/98	19:30:00	540.0000	15.16	-0.088
12/14/98	20:00:00	570.0000	15.17	-0.083
12/14/98	20:30:00	600.0000	15.17	-0.081
12/14/98	21:00:00	630.0000	15.17	-0.085
12/14/98	21:30:00	660.0000	15.19	-0.090
12/14/98	22:00:00	690.0000	15.18	-0.090
12/14/98	22:30:00	720.0000	15.18	-0.097
12/14/98	23:00:00	750.0000	15.17	-0.099
12/14/98	23:30:00	780.0000	15.18	-0.101
12/15/98	00:00:00	810.0000	15.19	-0.101
12/15/98	00:30:00	840.0000	15.18	-0.101
12/15/98	01:00:00	870.0000	15.19	-0.101
12/15/98	01:30:00	900.0000	15.18	-0.101
12/15/98	02:00:00	930.0000	15.18	-0.104
12/15/98	02:30:00	960.0000	15.17	-0.104
12/15/98	03:00:00	990.0000	15.16	-0.101
12/15/98	03:30:00	1020.0000	15.16	-0.095
12/15/98	04:00:00	1050.0000	15.16	-0.088
12/15/98	04:30:00	1080.0000	15.18	-0.083
12/15/98	05:00:00	1110.0000	15.18	-0.078
12/15/98	05:30:00	1140.0000	15.19	-0.072
12/15/98	06:00:00	1170.0000	15.19	-0.067
12/15/98	06:30:00	1200.0000	15.18	-0.072
12/15/98	07:00:00	1230.0000	15.16	-0.065
12/15/98	07:30:00	1260.0000	15.16	-0.065
12/15/98	08:00:00	1290.0000	15.18	-0.065
12/15/98	08:30:00	1320.0000	15.19	-0.055
12/15/98	09:00:00	1350.0000	15.18	-0.058
12/15/98	09:30:00	1380.0000	15.17	-0.058
12/15/98	10:00:00	1410.0000	15.17	-0.053
12/15/98	10:30:00	1440.0000	15.18	-0.039
12/15/98	11:00:00	1470.0000	15.16	-0.035

12/15/98	11:30:00	1500.0000	15.18	-0.023
12/15/98	12:00:00	1530.0000	15.14	-0.018
12/15/98	12:30:00	1560.0000	15.16	-0.014
12/15/98	13:00:00	1590.0000	15.14	-0.005
12/15/98	13:30:00	1620.0000	15.15	-0.002
12/15/98	14:00:00	1650.0000	15.16	0.000
12/15/98	14:30:00	1680.0000	15.13	0.002
12/15/98	15:00:00	1710.0000	15.12	-0.002
12/15/98	15:30:00	1740.0000	15.14	0.002
12/15/98	16:00:00	1770.0000	15.15	-0.005
12/15/98	16:30:00	1800.0000	15.16	0.000
12/15/98	17:00:00	1830.0000	15.15	-0.007
12/15/98	17:30:00	1860.0000	15.16	-0.005
12/15/98	18:00:00	1890.0000	15.14	-0.005
12/15/98	18:30:00	1920.0000	15.14	-0.005
12/15/98	19:00:00	1950.0000	15.17	-0.002
12/15/98	19:30:00	1980.0000	15.13	0.005
12/15/98	20:00:00	2010.0000	15.14	0.012
12/15/98	20:30:00	2040.0000	15.16	0.018
12/15/98	21:00:00	2070.0000	15.15	0.012
12/15/98	21:30:00	2100.0000	15.16	0.014
12/15/98	22:00:00	2130.0000	15.13	0.009
12/15/98	22:30:00	2160.0000	15.14	0.005
12/15/98	23:00:00	2190.0000	15.13	-0.005
12/15/98	23:30:00	2220.0000	15.15	-0.002
12/16/98	00:00:00	2250.0000	15.14	0.009
12/16/98	00:30:00	2280.0000	15.13	0.018
12/16/98	01:00:00	2310.0000	15.14	0.025
12/16/98	01:30:00	2340.0000	15.16	0.018
12/16/98	02:00:00	2370.0000	15.12	0.016
12/16/98	02:30:00	2400.0000	15.12	0.016
12/16/98	03:00:00	2430.0000	15.13	0.025
12/16/98	03:30:00	2460.0000	15.14	0.035
12/16/98	04:00:00	2490.0000	15.14	0.032
12/16/98	04:30:00	2520.0000	15.14	0.032
12/16/98	05:00:00	2550.0000	15.13	0.037
12/16/98	05:30:00	2580.0000	15.12	0.039
12/16/98	06:00:00	2610.0000	15.12	0.058
12/16/98	06:30:00	2640.0000	15.12	0.067
12/16/98	07:00:00	2670.0000	15.11	0.060
12/16/98	07:30:00	2700.0000	15.11	0.053
12/16/98	08:00:00	2730.0000	15.12	0.037
12/16/98	08:30:00	2760.0000	15.11	0.032

12/16/98	09:00:00	2790.0000	15.08	0.032
12/16/98	09:30:00	2820.0000	15.12	0.051
12/16/98	10:00:00	2850.0000	15.11	0.058
12/16/98	10:30:00	2880.0000	15.11	0.058
12/16/98	11:00:00	2910.0000	15.12	0.060
12/16/98	11:30:00	2940.0000	15.11	0.069
12/16/98	12:00:00	2970.0000	15.10	0.085
12/16/98	12:30:00	3000.0000	15.11	0.097
12/16/98	13:00:00	3030.0000	15.11	0.106
12/16/98	13:30:00	3060.0000	15.10	0.101
12/16/98	14:00:00	3090.0000	15.08	0.097
12/16/98	14:30:00	3120.0000	15.10	0.097
12/16/98	15:00:00	3150.0000	15.09	0.088
12/16/98	15:30:00	3180.0000	15.12	0.085
12/16/98	16:00:00	3210.0000	15.09	0.088
12/16/98	16:30:00	3240.0000	15.11	0.088
12/16/98	17:00:00	3270.0000	15.08	0.095
12/16/98	17:30:00	3300.0000	15.08	0.092
12/16/98	18:00:00	3330.0000	15.10	0.083
12/16/98	18:30:00	3360.0000	15.08	0.083
12/16/98	19:00:00	3390.0000	15.09	0.081
12/16/98	19:30:00	3420.0000	15.07	0.081
12/16/98	20:00:00	3450.0000	15.06	0.085
12/16/98	20:30:00	3480.0000	15.06	0.090
12/16/98	21:00:00	3510.0000	15.09	0.097
12/16/98	21:30:00	3540.0000	15.04	0.106
12/16/98	22:00:00	3570.0000	15.06	0.113
12/16/98	22:30:00	3600.0000	15.09	0.101
12/16/98	23:00:00	3630.0000	15.07	0.104
12/16/98	23:30:00	3660.0000	15.04	0.101
12/17/98	00:00:00	3690.0000	15.06	0.101
12/17/98	00:30:00	3720.0000	15.04	0.104
12/17/98	01:00:00	3750.0000	15.06	0.099
12/17/98	01:30:00	3780.0000	15.08	0.101
12/17/98	02:00:00	3810.0000	15.06	0.097
12/17/98	02:30:00	3840.0000	15.06	0.090
12/17/98	03:00:00	3870.0000	15.06	0.088
12/17/98	03:30:00	3900.0000	15.06	0.085
12/17/98	04:00:00	3930.0000	15.04	0.090
12/17/98	04:30:00	3960.0000	15.04	0.090
12/17/98	05:00:00	3990.0000	15.03	0.099
12/17/98	05:30:00	4020.0000	15.02	0.097
12/17/98	06:00:00	4050.0000	15.05	0.101

12/17/98	06:30:00	4080.0000	15.03	0.111
12/17/98	07:00:00	4110.0000	15.04	0.106
12/17/98	07:30:00	4140.0000	15.02	0.113
12/17/98	08:00:00	4170.0000	15.04	0.113
12/17/98	08:30:00	4200.0000	15.00	0.113
12/17/98	09:00:00	4230.0000	15.03	0.115
12/17/98	09:30:00	4260.0000	15.04	0.115
12/17/98	10:00:00	4290.0000	15.04	0.120
12/17/98	10:30:00	4320.0000	15.02	0.125
12/17/98	11:00:00	4350.0000	15.06	0.134
12/17/98	11:30:00	4380.0000	15.04	0.141
12/17/98	12:00:00	4410.0000	15.02	0.148
12/17/98	12:30:00	4440.0000	15.04	0.148
12/17/98	13:00:00	4470.0000	15.02	0.143
12/17/98	13:30:00	4500.0000	15.00	0.138
12/17/98	14:00:00	4530.0000	14.98	0.129
12/17/98	14:30:00	4560.0000	15.02	0.125
12/17/98	15:00:00	4590.0000	14.99	0.108
12/17/98	15:30:00	4620.0000	15.02	0.101
12/17/98	16:00:00	4650.0000	15.01	0.101
12/17/98	16:30:00	4680.0000	15.00	0.092
12/17/98	17:00:00	4710.0000	14.99	0.090
12/17/98	17:30:00	4740.0000	15.00	0.078
12/17/98	18:00:00	4770.0000	14.98	0.083
12/17/98	18:30:00	4800.0000	15.00	0.092
12/17/98	19:00:00	4830.0000	14.99	0.081
12/17/98	19:30:00	4860.0000	15.01	0.083
12/17/98	20:00:00	4890.0000	15.02	0.078
12/17/98	20:30:00	4920.0000	14.98	0.074
12/17/98	21:00:00	4950.0000	14.98	0.074
12/17/98	21:30:00	4980.0000	14.98	0.067
12/17/98	22:00:00	5010.0000	14.96	0.062
12/17/98	22:30:00	5040.0000	14.99	0.060
12/17/98	23:00:00	5070.0000	15.03	0.051
12/17/98	23:30:00	5100.0000	15.00	0.044
12/18/98	00:00:00	5130.0000	14.98	0.037
12/18/98	00:30:00	5160.0000	14.98	0.030
12/18/98	01:00:00	5190.0000	14.99	0.018
12/18/98	01:30:00	5220.0000	15.00	0.007
12/18/98	02:00:00	5250.0000	14.98	-0.002
12/18/98	02:30:00	5280.0000	14.99	-0.007
12/18/98	03:00:00	5310.0000	14.96	-0.018
12/18/98	03:30:00	5340.0000	15.01	-0.025

12/18/98	04:00:00	5370.0000	15.00	-0.032
12/18/98	04:30:00	5400.0000	15.01	-0.039
12/18/98	05:00:00	5430.0000	14.99	-0.055
12/18/98	05:30:00	5460.0000	14.98	-0.058
12/18/98	06:00:00	5490.0000	14.98	-0.065
12/18/98	06:30:00	5520.0000	14.98	-0.078
12/18/98	07:00:00	5550.0000	14.98	-0.083
12/18/98	07:30:00	5580.0000	14.99	-0.085
12/18/98	08:00:00	5610.0000	14.98	-0.092
12/18/98	08:30:00	5640.0000	14.98	-0.097
12/18/98	09:00:00	5670.0000	14.98	-0.101
12/18/98	09:30:00	5700.0000	14.99	-0.101
12/18/98	10:00:00	5730.0000	14.98	-0.104
12/18/98	10:30:00	5760.0000	14.96	-0.101
12/18/98	11:00:00	5790.0000	14.97	-0.099
12/18/98	11:30:00	5820.0000	14.99	-0.051

IN\_SITU INC. TROLL  
Serial number: 00001229  
Unit name: Well-lbmw3

Report generated: 12/22/98 13:04:48  
Report from file: A:\WLBMW3.BIN

Test name: Test 1

Test defined on: 12/14/98 10:26:00  
Test scheduled for: 12/14/98 10:30:00  
Test started on: 12/14/98 10:30:00  
Test stopped on: 12/18/98 11:20:40  
Test extracted on: 12/18/98 11:21:55

Data gathered using Linear testing

Time between data points: 30.0000 Minutes.  
Number of data samples: 194

Channel number [1]

Measurement type: Temperature  
Channel name: well-lbmw3

Channel number [2]

Measurement type: Pressure/Level  
Channel name: well-lbmw3  
Specific gravity: 1.000  
Mode: Surface  
User-defined reference: 0.000 Feet H<sub>2</sub>O  
Referenced on: test start  
Pressure head at reference: 5.388 Feet H<sub>2</sub>O

Date	Time	ET (min)	Channel[1]	Channel[2]
			Celsius	Feet H <sub>2</sub> O
12/14/98	10:30:00	0.0000	14.58	0.000
12/14/98	11:00:00	30.0000	15.15	-0.051
12/14/98	11:30:00	60.0000	15.23	-0.053
12/14/98	12:00:00	90.0000	15.21	-0.051
12/14/98	12:30:00	120.0000	15.21	-0.058
12/14/98	13:00:00	150.0000	15.21	-0.055
12/14/98	13:30:00	180.0000	15.26	-0.058

12/14/98	14:00:00	210.0000	15.22	-0.058
12/14/98	14:30:00	240.0000	15.22	-0.055
12/14/98	15:00:00	270.0000	15.23	-0.058
12/14/98	15:30:00	300.0000	15.24	-0.060
12/14/98	16:00:00	330.0000	15.23	-0.055
12/14/98	16:30:00	360.0000	15.24	-0.046
12/14/98	17:00:00	390.0000	15.22	-0.042
12/14/98	17:30:00	420.0000	15.22	-0.042
12/14/98	18:00:00	450.0000	15.24	-0.039
12/14/98	18:30:00	480.0000	15.24	-0.044
12/14/98	19:00:00	510.0000	15.22	-0.046
12/14/98	19:30:00	540.0000	15.22	-0.051
12/14/98	20:00:00	570.0000	15.22	-0.051
12/14/98	20:30:00	600.0000	15.22	-0.053
12/14/98	21:00:00	630.0000	15.23	-0.058
12/14/98	21:30:00	660.0000	15.22	-0.060
12/14/98	22:00:00	690.0000	15.19	-0.058
12/14/98	22:30:00	720.0000	15.20	-0.060
12/14/98	23:00:00	750.0000	15.19	-0.058
12/14/98	23:30:00	780.0000	15.20	-0.058
12/15/98	00:00:00	810.0000	15.21	-0.060
12/15/98	00:30:00	840.0000	15.21	-0.060
12/15/98	01:00:00	870.0000	15.22	-0.060
12/15/98	01:30:00	900.0000	15.19	-0.060
12/15/98	02:00:00	930.0000	15.22	-0.062
12/15/98	02:30:00	960.0000	15.22	-0.058
12/15/98	03:00:00	990.0000	15.19	-0.065
12/15/98	03:30:00	1020.0000	15.21	-0.058
12/15/98	04:00:00	1050.0000	15.19	-0.060
12/15/98	04:30:00	1080.0000	15.21	-0.051
12/15/98	05:00:00	1110.0000	15.21	-0.039
12/15/98	05:30:00	1140.0000	15.21	-0.035
12/15/98	06:00:00	1170.0000	15.19	-0.030
12/15/98	06:30:00	1200.0000	15.16	-0.032
12/15/98	07:00:00	1230.0000	15.19	-0.030
12/15/98	07:30:00	1260.0000	15.19	-0.035
12/15/98	08:00:00	1290.0000	15.18	-0.039
12/15/98	08:30:00	1320.0000	15.17	-0.048
12/15/98	09:00:00	1350.0000	15.19	-0.048
12/15/98	09:30:00	1380.0000	15.18	-0.051
12/15/98	10:00:00	1410.0000	15.18	-0.058
12/15/98	10:30:00	1440.0000	15.19	-0.051
12/15/98	11:00:00	1470.0000	15.19	-0.051

12/15/98	11:30:00	1500.0000	15.19	-0.053
12/15/98	12:00:00	1530.0000	15.15	-0.051
12/15/98	12:30:00	1560.0000	15.17	-0.048
12/15/98	13:00:00	1590.0000	15.14	-0.048
12/15/98	13:30:00	1620.0000	15.16	-0.048
12/15/98	14:00:00	1650.0000	15.18	-0.046
12/15/98	14:30:00	1680.0000	15.15	-0.046
12/15/98	15:00:00	1710.0000	15.16	-0.051
12/15/98	15:30:00	1740.0000	15.16	-0.048
12/15/98	16:00:00	1770.0000	15.16	-0.046
12/15/98	16:30:00	1800.0000	15.17	-0.048
12/15/98	17:00:00	1830.0000	15.18	-0.051
12/15/98	17:30:00	1860.0000	15.14	-0.048
12/15/98	18:00:00	1890.0000	15.17	-0.048
12/15/98	18:30:00	1920.0000	15.15	-0.048
12/15/98	19:00:00	1950.0000	15.14	-0.046
12/15/98	19:30:00	1980.0000	15.14	-0.048
12/15/98	20:00:00	2010.0000	15.14	-0.044
12/15/98	20:30:00	2040.0000	15.16	-0.046
12/15/98	21:00:00	2070.0000	15.15	-0.048
12/15/98	21:30:00	2100.0000	15.14	-0.048
12/15/98	22:00:00	2130.0000	15.17	-0.051
12/15/98	22:30:00	2160.0000	15.15	-0.055
12/15/98	23:00:00	2190.0000	15.14	-0.051
12/15/98	23:30:00	2220.0000	15.14	-0.051
12/16/98	00:00:00	2250.0000	15.14	-0.048
12/16/98	00:30:00	2280.0000	15.15	-0.044
12/16/98	01:00:00	2310.0000	15.13	-0.044
12/16/98	01:30:00	2340.0000	15.13	-0.048
12/16/98	02:00:00	2370.0000	15.14	-0.048
12/16/98	02:30:00	2400.0000	15.12	-0.048
12/16/98	03:00:00	2430.0000	15.13	-0.044
12/16/98	03:30:00	2460.0000	15.13	-0.042
12/16/98	04:00:00	2490.0000	15.11	-0.046
12/16/98	04:30:00	2520.0000	15.15	-0.044
12/16/98	05:00:00	2550.0000	15.13	-0.046
12/16/98	05:30:00	2580.0000	15.13	-0.037
12/16/98	06:00:00	2610.0000	15.12	-0.021
12/16/98	06:30:00	2640.0000	15.11	-0.012
12/16/98	07:00:00	2670.0000	15.11	-0.018
12/16/98	07:30:00	2700.0000	15.10	-0.023
12/16/98	08:00:00	2730.0000	15.10	-0.030
12/16/98	08:30:00	2760.0000	15.11	-0.032

12/16/98	09:00:00	2790.0000	15.11	-0.039
12/16/98	09:30:00	2820.0000	15.11	-0.035
12/16/98	10:00:00	2850.0000	15.11	-0.035
12/16/98	10:30:00	2880.0000	15.13	-0.037
12/16/98	11:00:00	2910.0000	15.10	-0.037
12/16/98	11:30:00	2940.0000	15.11	-0.037
12/16/98	12:00:00	2970.0000	15.10	-0.030
12/16/98	12:30:00	3000.0000	15.12	-0.032
12/16/98	13:00:00	3030.0000	15.08	-0.028
12/16/98	13:30:00	3060.0000	15.11	-0.032
12/16/98	14:00:00	3090.0000	15.11	-0.030
12/16/98	14:30:00	3120.0000	15.11	-0.030
12/16/98	15:00:00	3150.0000	15.08	-0.032
12/16/98	15:30:00	3180.0000	15.11	-0.032
12/16/98	16:00:00	3210.0000	15.10	-0.030
12/16/98	16:30:00	3240.0000	15.10	-0.030
12/16/98	17:00:00	3270.0000	15.08	-0.035
12/16/98	17:30:00	3300.0000	15.08	-0.030
12/16/98	18:00:00	3330.0000	15.10	-0.028
12/16/98	18:30:00	3360.0000	15.08	-0.018
12/16/98	19:00:00	3390.0000	15.05	-0.018
12/16/98	19:30:00	3420.0000	15.09	-0.018
12/16/98	20:00:00	3450.0000	15.06	-0.016
12/16/98	20:30:00	3480.0000	15.08	-0.018
12/16/98	21:00:00	3510.0000	15.08	-0.018
12/16/98	21:30:00	3540.0000	15.07	-0.018
12/16/98	22:00:00	3570.0000	15.08	-0.021
12/16/98	22:30:00	3600.0000	15.05	-0.028
12/16/98	23:00:00	3630.0000	15.06	-0.028
12/16/98	23:30:00	3660.0000	15.05	-0.025
12/17/98	00:00:00	3690.0000	15.08	-0.028
12/17/98	00:30:00	3720.0000	15.05	-0.028
12/17/98	01:00:00	3750.0000	15.05	-0.030
12/17/98	01:30:00	3780.0000	15.06	-0.030
12/17/98	02:00:00	3810.0000	15.03	-0.032
12/17/98	02:30:00	3840.0000	15.03	-0.032
12/17/98	03:00:00	3870.0000	15.06	-0.035
12/17/98	03:30:00	3900.0000	15.05	-0.032
12/17/98	04:00:00	3930.0000	15.05	-0.032
12/17/98	04:30:00	3960.0000	15.03	-0.035
12/17/98	05:00:00	3990.0000	15.00	-0.032
12/17/98	05:30:00	4020.0000	15.04	-0.018
12/17/98	06:00:00	4050.0000	15.03	-0.007

12/17/98	06:30:00	4080.0000	15.03	0.007
12/17/98	07:00:00	4110.0000	15.00	0.016
12/17/98	07:30:00	4140.0000	15.03	0.030
12/17/98	08:00:00	4170.0000	15.02	0.035
12/17/98	08:30:00	4200.0000	15.03	0.039
12/17/98	09:00:00	4230.0000	15.00	0.039
12/17/98	09:30:00	4260.0000	15.01	0.035
12/17/98	10:00:00	4290.0000	15.00	0.018
12/17/98	10:30:00	4320.0000	15.00	-0.002
12/17/98	11:00:00	4350.0000	15.03	-0.032
12/17/98	11:30:00	4380.0000	15.03	-0.090
12/17/98	12:00:00	4410.0000	14.98	-0.113
12/17/98	12:30:00	4440.0000	15.02	-0.106
12/17/98	13:00:00	4470.0000	15.00	-0.069
12/17/98	13:30:00	4500.0000	15.00	0.000
12/17/98	14:00:00	4530.0000	15.02	0.002
12/17/98	14:30:00	4560.0000	14.97	-0.002
12/17/98	15:00:00	4590.0000	15.00	-0.012
12/17/98	15:30:00	4620.0000	15.02	-0.009
12/17/98	16:00:00	4650.0000	15.01	-0.009
12/17/98	16:30:00	4680.0000	15.01	-0.012
12/17/98	17:00:00	4710.0000	15.00	-0.012
12/17/98	17:30:00	4740.0000	15.00	-0.018
12/17/98	18:00:00	4770.0000	14.98	-0.014
12/17/98	18:30:00	4800.0000	15.00	-0.007
12/17/98	19:00:00	4830.0000	14.99	0.000
12/17/98	19:30:00	4860.0000	14.98	0.002
12/17/98	20:00:00	4890.0000	14.98	0.005
12/17/98	20:30:00	4920.0000	14.97	0.005
12/17/98	21:00:00	4950.0000	14.97	-0.002
12/17/98	21:30:00	4980.0000	15.00	-0.012
12/17/98	22:00:00	5010.0000	14.98	-0.018
12/17/98	22:30:00	5040.0000	14.97	-0.021
12/17/98	23:00:00	5070.0000	14.96	-0.030
12/17/98	23:30:00	5100.0000	14.96	-0.032
12/18/98	00:00:00	5130.0000	14.97	-0.032
12/18/98	00:30:00	5160.0000	14.96	-0.037
12/18/98	01:00:00	5190.0000	14.97	-0.044
12/18/98	01:30:00	5220.0000	14.98	-0.048
12/18/98	02:00:00	5250.0000	14.96	-0.051
12/18/98	02:30:00	5280.0000	14.99	-0.051
12/18/98	03:00:00	5310.0000	14.94	-0.055
12/18/98	03:30:00	5340.0000	14.95	-0.060

12/18/98	04:00:00	5370.0000	14.94	-0.060
12/18/98	04:30:00	5400.0000	14.96	-0.065
12/18/98	05:00:00	5430.0000	14.98	-0.067
12/18/98	05:30:00	5460.0000	14.99	-0.069
12/18/98	06:00:00	5490.0000	14.96	-0.065
12/18/98	06:30:00	5520.0000	14.95	-0.058
12/18/98	07:00:00	5550.0000	14.95	-0.048
12/18/98	07:30:00	5580.0000	14.95	-0.044
12/18/98	08:00:00	5610.0000	14.94	-0.037
12/18/98	08:30:00	5640.0000	14.95	-0.039
12/18/98	09:00:00	5670.0000	14.93	-0.042
12/18/98	09:30:00	5700.0000	14.92	-0.044
12/18/98	10:00:00	5730.0000	14.94	-0.055
12/18/98	10:30:00	5760.0000	14.94	-0.062
12/18/98	11:00:00	5790.0000	14.94	-0.065

IN\_SITU INC. TROLL  
Serial number: 00001228  
Unit name: well-29wa  
  
Report generated: 12/22/98 13:05:32  
Report from file: A:\W29WA.BIN

Test name:well-29wa

Test defined on: 12/14/98 09:22:48  
Test scheduled for: 12/14/98 09:30:00  
Test started on: 12/14/98 09:30:00  
Test stopped on: 12/18/98 11:04:33  
Test extracted on: 12/18/98 11:05:18

Data gathered using Linear testing

Time between data points: 30.0000 Minutes.  
Number of data samples: 196

Channel number [2]

Measurement type: Pressure/Level  
Channel name: well-29wa  
Specific gravity: 1.000  
Mode: Surface  
User-defined reference: 0.000 Feet H<sub>2</sub>O  
Referenced on: channel definition.  
Pressure head at reference: 5.380 Feet H<sub>2</sub>O

Channel number [1]

Measurement type: Temperature  
Channel name: well-29wa

Date	Time	ET (min)	Channel[2]	Channel[1]
			Feet H <sub>2</sub> O	Celsius
12/14/98	09:30:00	0.0000	-0.019	15.02
12/14/98	10:00:00	30.0000	-0.012	15.65
12/14/98	10:30:00	60.0000	-0.019	15.70
12/14/98	11:00:00	90.0000	0.002	15.72
12/14/98	11:30:00	120.0000	0.002	15.72
12/14/98	12:00:00	150.0000	0.000	15.71
12/14/98	12:30:00	180.0000	0.004	15.71

12/14/98	13:00:00	210.0000	0.000	15.71
12/14/98	13:30:00	240.0000	0.000	15.71
12/14/98	14:00:00	270.0000	0.000	15.71
12/14/98	14:30:00	300.0000	-0.003	15.70
12/14/98	15:00:00	330.0000	0.002	15.71
12/14/98	15:30:00	360.0000	0.000	15.71
12/14/98	16:00:00	390.0000	0.002	15.70
12/14/98	16:30:00	420.0000	-0.003	15.70
12/14/98	17:00:00	450.0000	0.000	15.70
12/14/98	17:30:00	480.0000	0.000	15.70
12/14/98	18:00:00	510.0000	0.000	15.70
12/14/98	18:30:00	540.0000	0.000	15.70
12/14/98	19:00:00	570.0000	0.000	15.70
12/14/98	19:30:00	600.0000	-0.003	15.70
12/14/98	20:00:00	630.0000	-0.003	15.70
12/14/98	20:30:00	660.0000	0.000	15.70
12/14/98	21:00:00	690.0000	0.000	15.70
12/14/98	21:30:00	720.0000	-0.005	15.70
12/14/98	22:00:00	750.0000	0.000	15.69
12/14/98	22:30:00	780.0000	-0.007	15.69
12/14/98	23:00:00	810.0000	-0.003	15.69
12/14/98	23:30:00	840.0000	-0.003	15.70
12/15/98	00:00:00	870.0000	-0.005	15.69
12/15/98	00:30:00	900.0000	-0.005	15.69
12/15/98	01:00:00	930.0000	-0.005	15.69
12/15/98	01:30:00	960.0000	0.000	15.69
12/15/98	02:00:00	990.0000	-0.003	15.68
12/15/98	02:30:00	1020.0000	-0.003	15.69
12/15/98	03:00:00	1050.0000	-0.003	15.69
12/15/98	03:30:00	1080.0000	-0.005	15.68
12/15/98	04:00:00	1110.0000	-0.005	15.69
12/15/98	04:30:00	1140.0000	-0.003	15.68
12/15/98	05:00:00	1170.0000	0.000	15.68
12/15/98	05:30:00	1200.0000	-0.003	15.68
12/15/98	06:00:00	1230.0000	-0.003	15.68
12/15/98	06:30:00	1260.0000	-0.007	15.68
12/15/98	07:00:00	1290.0000	-0.005	15.68
12/15/98	07:30:00	1320.0000	-0.003	15.68
12/15/98	08:00:00	1350.0000	-0.003	15.68
12/15/98	08:30:00	1380.0000	-0.005	15.68
12/15/98	09:00:00	1410.0000	-0.005	15.67
12/15/98	09:30:00	1440.0000	-0.007	15.67
12/15/98	10:00:00	1470.0000	-0.005	15.68

12/15/98	10:30:00	1500.0000	-0.005	15.67
12/15/98	11:00:00	1530.0000	-0.007	15.67
12/15/98	11:30:00	1560.0000	-0.003	15.67
12/15/98	12:00:00	1590.0000	-0.003	15.68
12/15/98	12:30:00	1620.0000	-0.007	15.67
12/15/98	13:00:00	1650.0000	-0.005	15.67
12/15/98	13:30:00	1680.0000	-0.010	15.67
12/15/98	14:00:00	1710.0000	-0.010	15.67
12/15/98	14:30:00	1740.0000	-0.005	15.67
12/15/98	15:00:00	1770.0000	0.000	15.67
12/15/98	15:30:00	1800.0000	-0.003	15.67
12/15/98	16:00:00	1830.0000	-0.005	15.67
12/15/98	16:30:00	1860.0000	-0.005	15.67
12/15/98	17:00:00	1890.0000	-0.005	15.67
12/15/98	17:30:00	1920.0000	-0.005	15.67
12/15/98	18:00:00	1950.0000	-0.003	15.67
12/15/98	18:30:00	1980.0000	-0.005	15.67
12/15/98	19:00:00	2010.0000	-0.005	15.67
12/15/98	19:30:00	2040.0000	-0.003	15.67
12/15/98	20:00:00	2070.0000	-0.005	15.66
12/15/98	20:30:00	2100.0000	-0.005	15.67
12/15/98	21:00:00	2130.0000	-0.003	15.67
12/15/98	21:30:00	2160.0000	-0.005	15.66
12/15/98	22:00:00	2190.0000	-0.003	15.67
12/15/98	22:30:00	2220.0000	-0.007	15.66
12/15/98	23:00:00	2250.0000	-0.005	15.65
12/15/98	23:30:00	2280.0000	-0.003	15.66
12/16/98	00:00:00	2310.0000	-0.003	15.66
12/16/98	00:30:00	2340.0000	-0.003	15.66
12/16/98	01:00:00	2370.0000	-0.003	15.66
12/16/98	01:30:00	2400.0000	-0.005	15.66
12/16/98	02:00:00	2430.0000	-0.003	15.66
12/16/98	02:30:00	2460.0000	-0.003	15.65
12/16/98	03:00:00	2490.0000	-0.003	15.66
12/16/98	03:30:00	2520.0000	-0.003	15.65
12/16/98	04:00:00	2550.0000	-0.003	15.66
12/16/98	04:30:00	2580.0000	0.000	15.65
12/16/98	05:00:00	2610.0000	-0.003	15.65
12/16/98	05:30:00	2640.0000	-0.003	15.65
12/16/98	06:00:00	2670.0000	-0.003	15.65
12/16/98	06:30:00	2700.0000	-0.007	15.65
12/16/98	07:00:00	2730.0000	-0.005	15.65
12/16/98	07:30:00	2760.0000	-0.005	15.65

12/16/98	08:00:00	2790.0000	-0.003	15.65
12/16/98	08:30:00	2820.0000	-0.003	15.64
12/16/98	09:00:00	2850.0000	-0.003	15.64
12/16/98	09:30:00	2880.0000	-0.005	15.64
12/16/98	10:00:00	2910.0000	-0.005	15.65
12/16/98	10:30:00	2940.0000	-0.003	15.65
12/16/98	11:00:00	2970.0000	0.000	15.65
12/16/98	11:30:00	3000.0000	-0.003	15.65
12/16/98	12:00:00	3030.0000	0.000	15.65
12/16/98	12:30:00	3060.0000	-0.003	15.64
12/16/98	13:00:00	3090.0000	-0.003	15.65
12/16/98	13:30:00	3120.0000	0.000	15.65
12/16/98	14:00:00	3150.0000	0.000	15.64
12/16/98	14:30:00	3180.0000	-0.005	15.64
12/16/98	15:00:00	3210.0000	-0.003	15.64
12/16/98	15:30:00	3240.0000	-0.005	15.64
12/16/98	16:00:00	3270.0000	-0.003	15.64
12/16/98	16:30:00	3300.0000	-0.005	15.65
12/16/98	17:00:00	3330.0000	0.000	15.64
12/16/98	17:30:00	3360.0000	-0.003	15.64
12/16/98	18:00:00	3390.0000	-0.005	15.64
12/16/98	18:30:00	3420.0000	-0.003	15.63
12/16/98	19:00:00	3450.0000	-0.005	15.63
12/16/98	19:30:00	3480.0000	-0.003	15.64
12/16/98	20:00:00	3510.0000	-0.003	15.64
12/16/98	20:30:00	3540.0000	-0.003	15.63
12/16/98	21:00:00	3570.0000	-0.003	15.63
12/16/98	21:30:00	3600.0000	-0.005	15.63
12/16/98	22:00:00	3630.0000	-0.003	15.62
12/16/98	22:30:00	3660.0000	-0.003	15.63
12/16/98	23:00:00	3690.0000	0.000	15.62
12/16/98	23:30:00	3720.0000	-0.003	15.62
12/17/98	00:00:00	3750.0000	-0.003	15.63
12/17/98	00:30:00	3780.0000	-0.003	15.63
12/17/98	01:00:00	3810.0000	-0.003	15.64
12/17/98	01:30:00	3840.0000	-0.005	15.62
12/17/98	02:00:00	3870.0000	-0.003	15.62
12/17/98	02:30:00	3900.0000	-0.003	15.63
12/17/98	03:00:00	3930.0000	-0.005	15.61
12/17/98	03:30:00	3960.0000	-0.003	15.62
12/17/98	04:00:00	3990.0000	-0.005	15.62
12/17/98	04:30:00	4020.0000	-0.003	15.62
12/17/98	05:00:00	4050.0000	-0.005	15.62

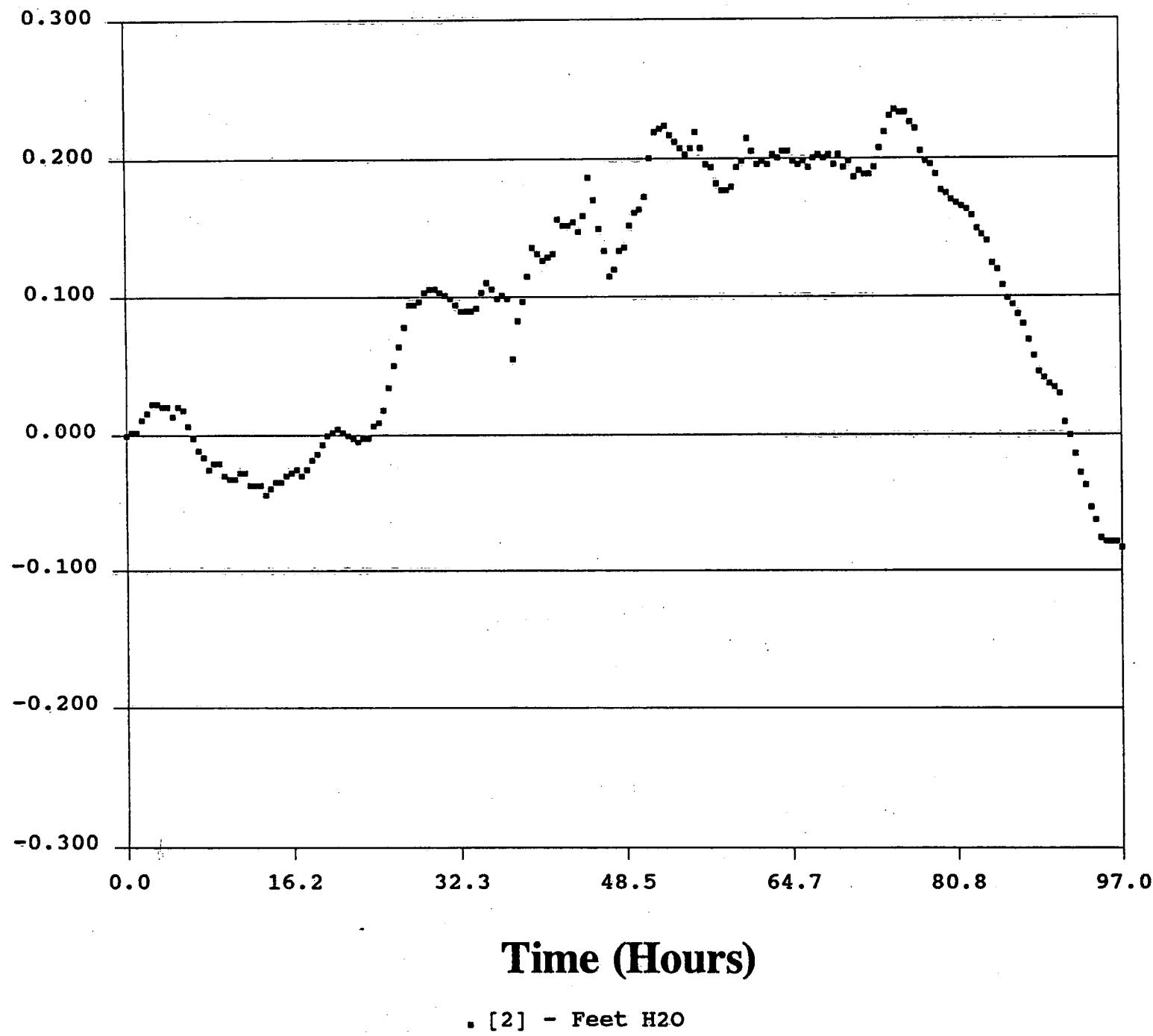
12/17/98	05:30:00	4080.0000	-0.003	15.62
12/17/98	06:00:00	4110.0000	-0.005	15.62
12/17/98	06:30:00	4140.0000	-0.005	15.62
12/17/98	07:00:00	4170.0000	-0.003	15.61
12/17/98	07:30:00	4200.0000	-0.005	15.61
12/17/98	08:00:00	4230.0000	-0.005	15.61
12/17/98	08:30:00	4260.0000	-0.007	15.61
12/17/98	09:00:00	4290.0000	-0.003	15.61
12/17/98	09:30:00	4320.0000	-0.005	15.61
12/17/98	10:00:00	4350.0000	-0.005	15.61
12/17/98	10:30:00	4380.0000	-0.003	15.60
12/17/98	11:00:00	4410.0000	-0.003	15.61
12/17/98	11:30:00	4440.0000	-0.005	15.60
12/17/98	12:00:00	4470.0000	-0.003	15.61
12/17/98	12:30:00	4500.0000	-0.005	15.60
12/17/98	13:00:00	4530.0000	-0.005	15.60
12/17/98	13:30:00	4560.0000	-0.003	15.60
12/17/98	14:00:00	4590.0000	-0.005	15.60
12/17/98	14:30:00	4620.0000	-0.005	15.60
12/17/98	15:00:00	4650.0000	-0.007	15.61
12/17/98	15:30:00	4680.0000	-0.003	15.60
12/17/98	16:00:00	4710.0000	-0.007	15.60
12/17/98	16:30:00	4740.0000	-0.005	15.60
12/17/98	17:00:00	4770.0000	-0.007	15.60
12/17/98	17:30:00	4800.0000	-0.005	15.60
12/17/98	18:00:00	4830.0000	-0.005	15.60
12/17/98	18:30:00	4860.0000	0.000	15.59
12/17/98	19:00:00	4890.0000	-0.003	15.59
12/17/98	19:30:00	4920.0000	-0.005	15.59
12/17/98	20:00:00	4950.0000	-0.005	15.60
12/17/98	20:30:00	4980.0000	-0.005	15.60
12/17/98	21:00:00	5010.0000	-0.005	15.59
12/17/98	21:30:00	5040.0000	-0.005	15.59
12/17/98	22:00:00	5070.0000	-0.007	15.59
12/17/98	22:30:00	5100.0000	-0.010	15.59
12/17/98	23:00:00	5130.0000	-0.010	15.59
12/17/98	23:30:00	5160.0000	-0.007	15.58
12/18/98	00:00:00	5190.0000	-0.012	15.59
12/18/98	00:30:00	5220.0000	-0.010	15.58
12/18/98	01:00:00	5250.0000	-0.010	15.59
12/18/98	01:30:00	5280.0000	-0.012	15.59
12/18/98	02:00:00	5310.0000	-0.012	15.58
12/18/98	02:30:00	5340.0000	-0.010	15.59

12/18/98	03:00:00	5370.0000	-0.012	15.58
12/18/98	03:30:00	5400.0000	-0.012	15.58
12/18/98	04:00:00	5430.0000	-0.012	15.58
12/18/98	04:30:00	5460.0000	-0.012	15.58
12/18/98	05:00:00	5490.0000	-0.014	15.58
12/18/98	05:30:00	5520.0000	-0.014	15.58
12/18/98	06:00:00	5550.0000	-0.014	15.57
12/18/98	06:30:00	5580.0000	-0.017	15.57
12/18/98	07:00:00	5610.0000	-0.014	15.57
12/18/98	07:30:00	5640.0000	-0.017	15.56
12/18/98	08:00:00	5670.0000	-0.019	15.56
12/18/98	08:30:00	5700.0000	-0.017	15.56
12/18/98	09:00:00	5730.0000	-0.014	15.56
12/18/98	09:30:00	5760.0000	-0.021	15.56
12/18/98	10:00:00	5790.0000	-0.021	15.56
12/18/98	10:30:00	5820.0000	-0.021	15.56
12/18/98	11:00:00	5850.0000	-0.019	15.56

**ATTACHMENT B**  
**PLOTTED DATA**

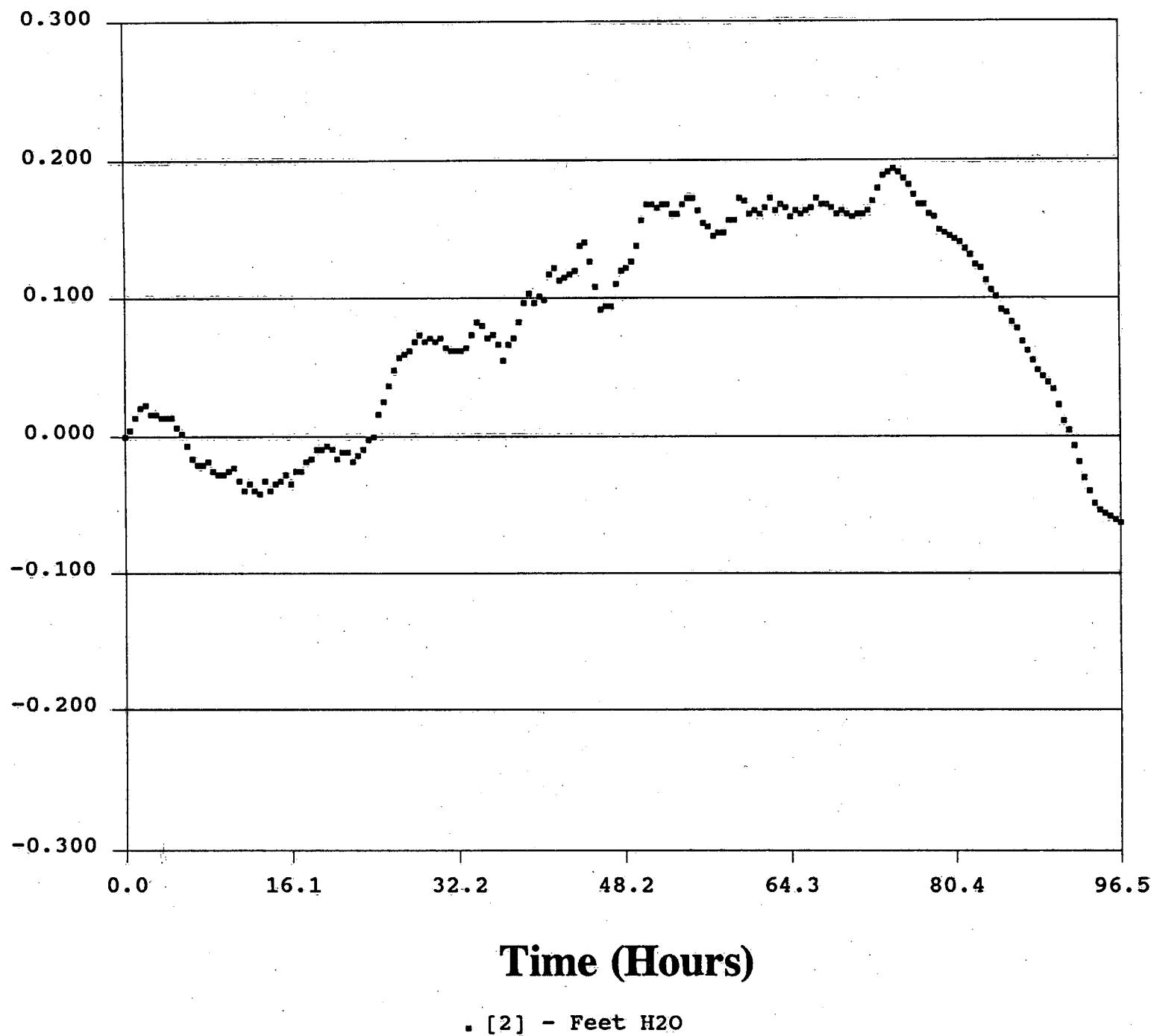
# *Well-A*

Feet H<sub>2</sub>O



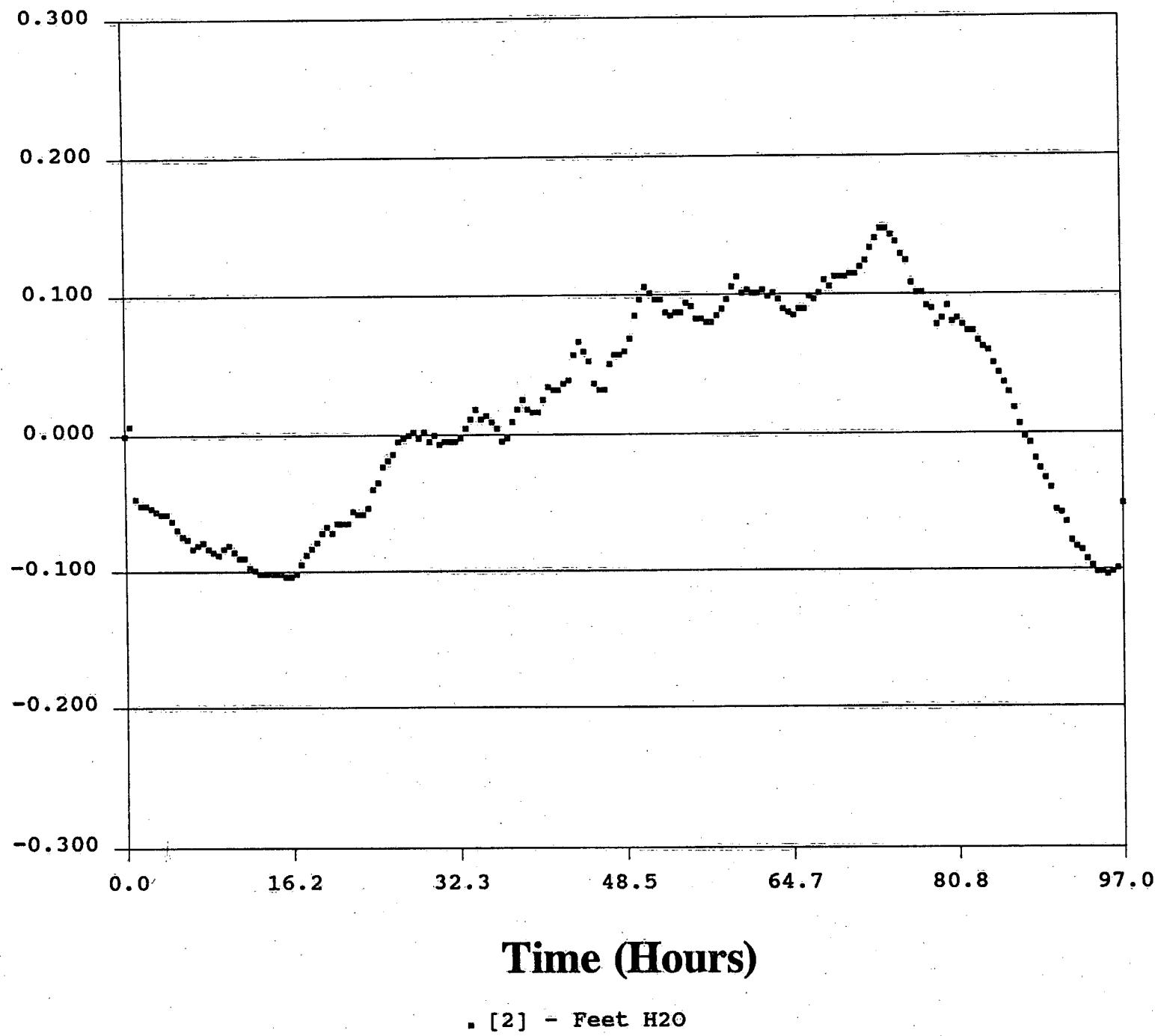
# **MW-2614920**

**Feet H<sub>2</sub>O**



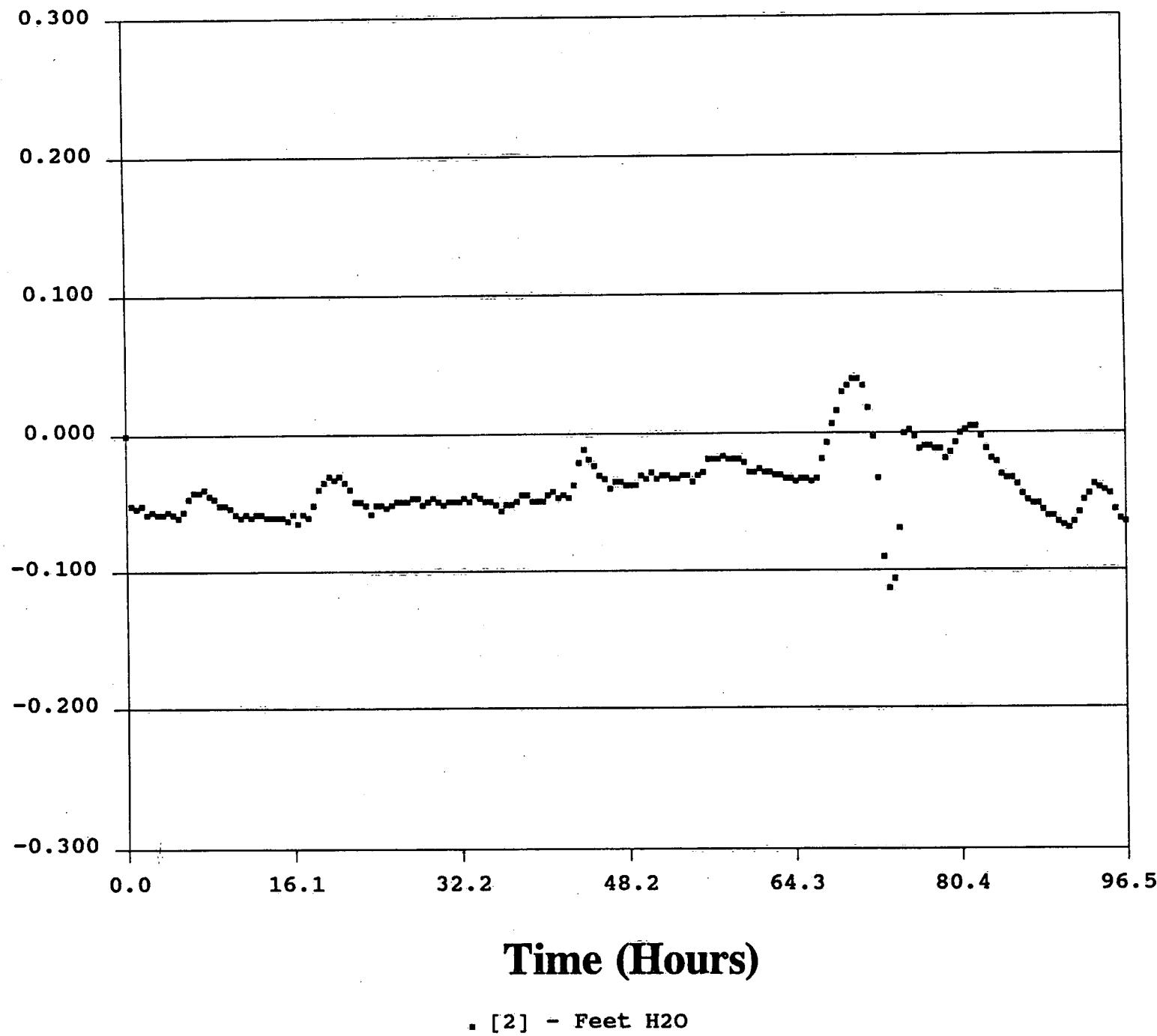
# *MW-BBDC3*

Feet H<sub>2</sub>O



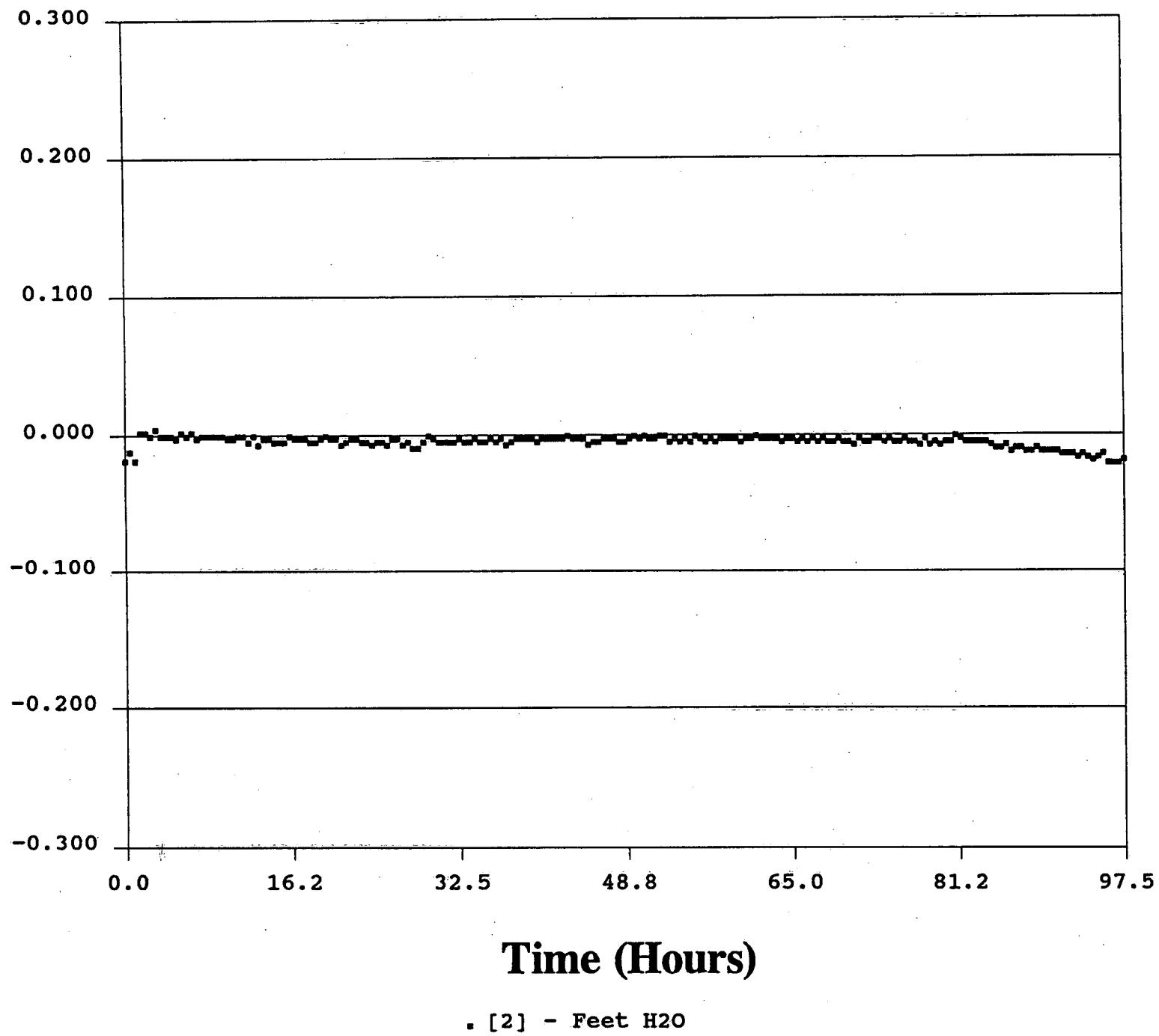
# ***MW-LBMW3***

Feet H<sub>2</sub>O



# **MW-29WA**

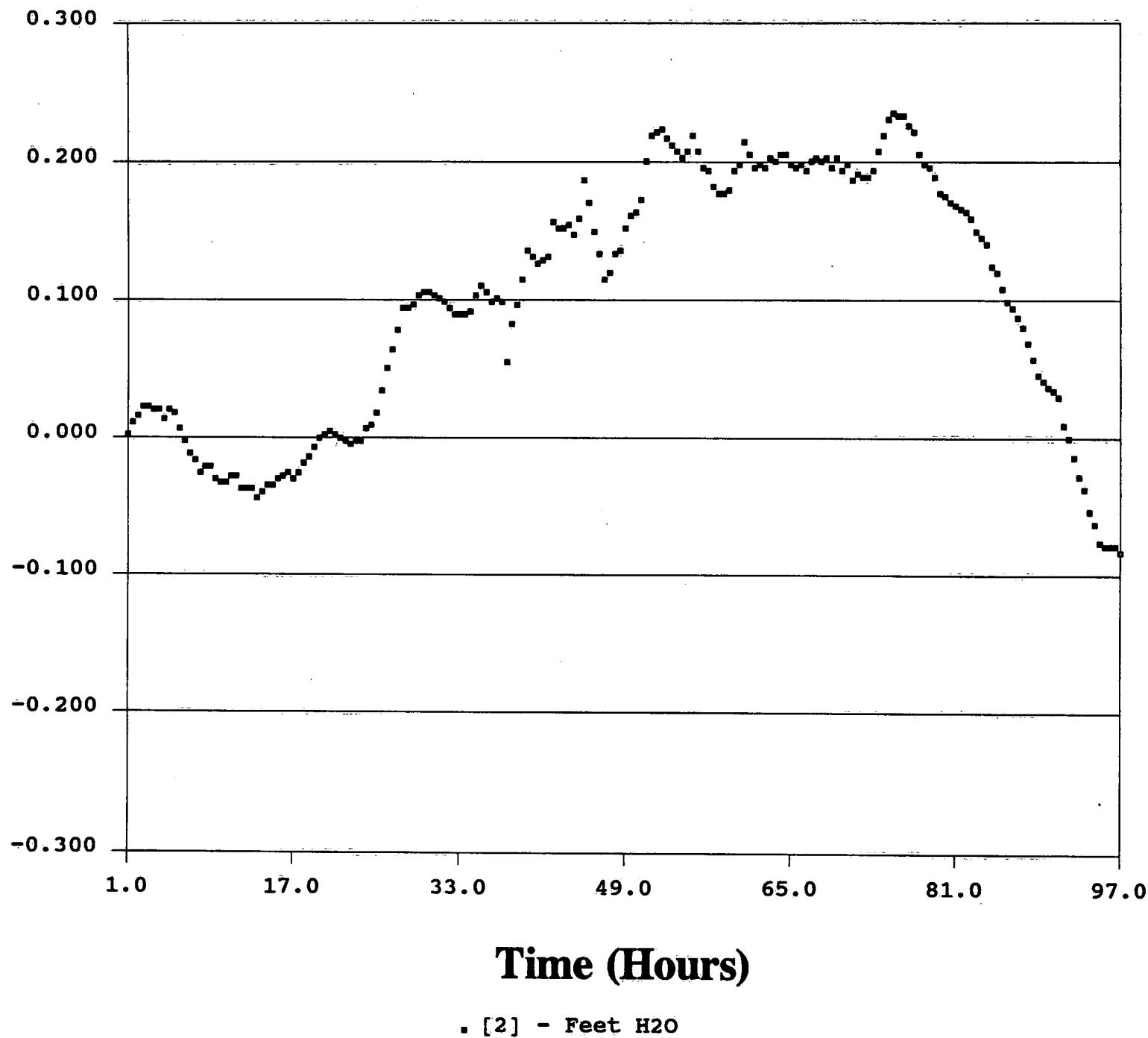
**Feet H<sub>2</sub>O**



**ATTACHMENT C**  
**TEST DATA**

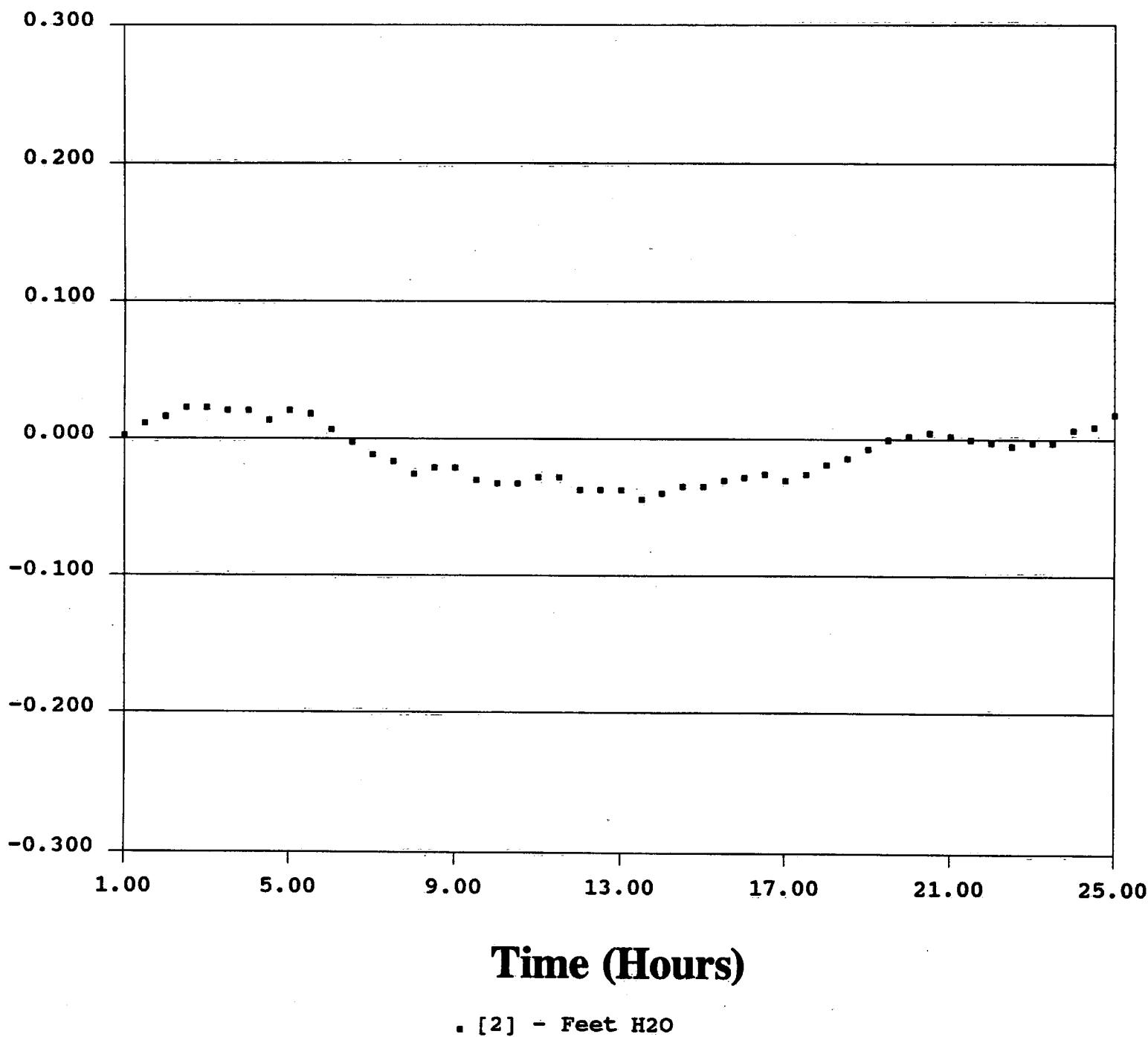
# *Well-A*

Feet H<sub>2</sub>O



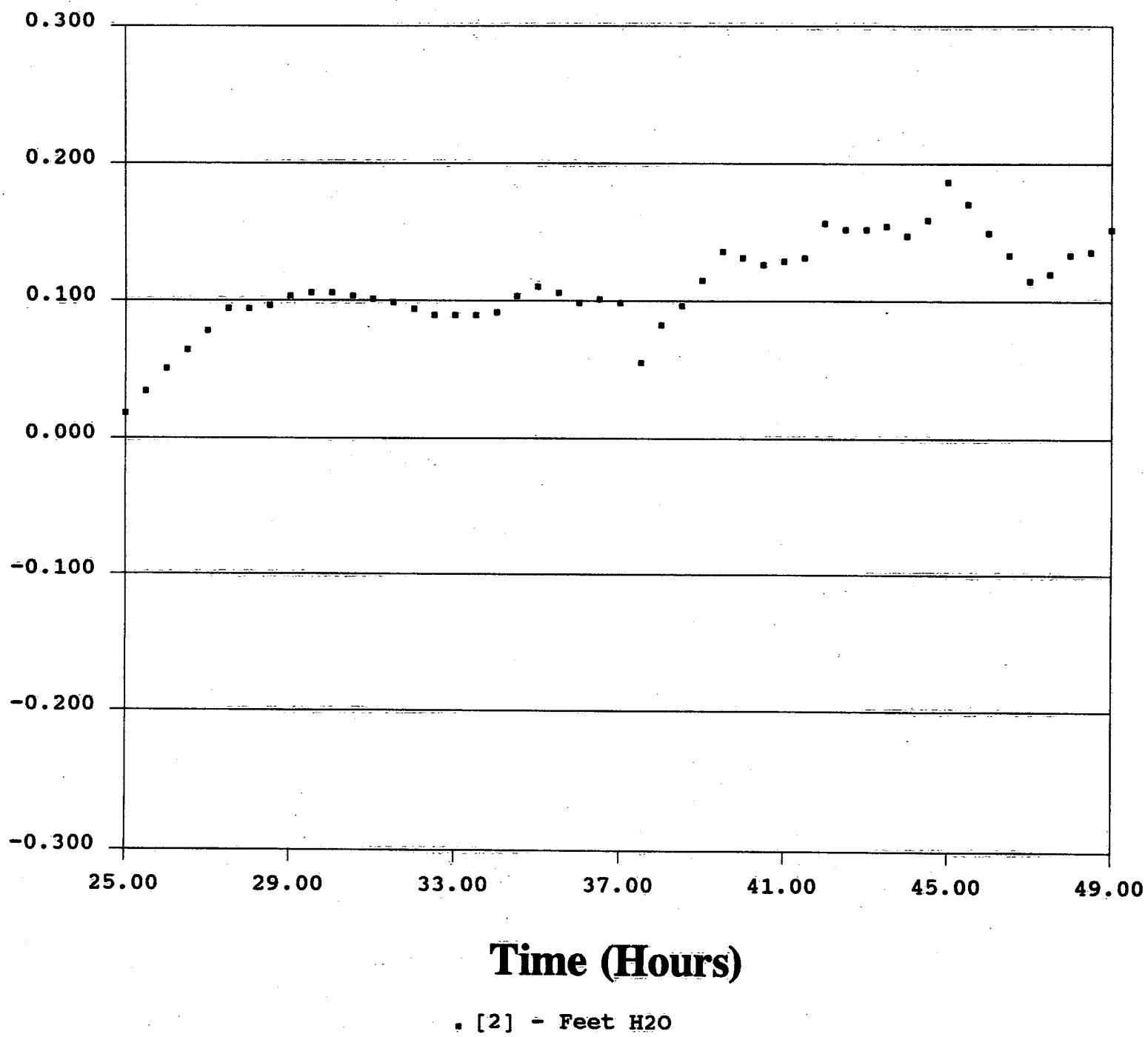
# *Well-A*

Feet H<sub>2</sub>O



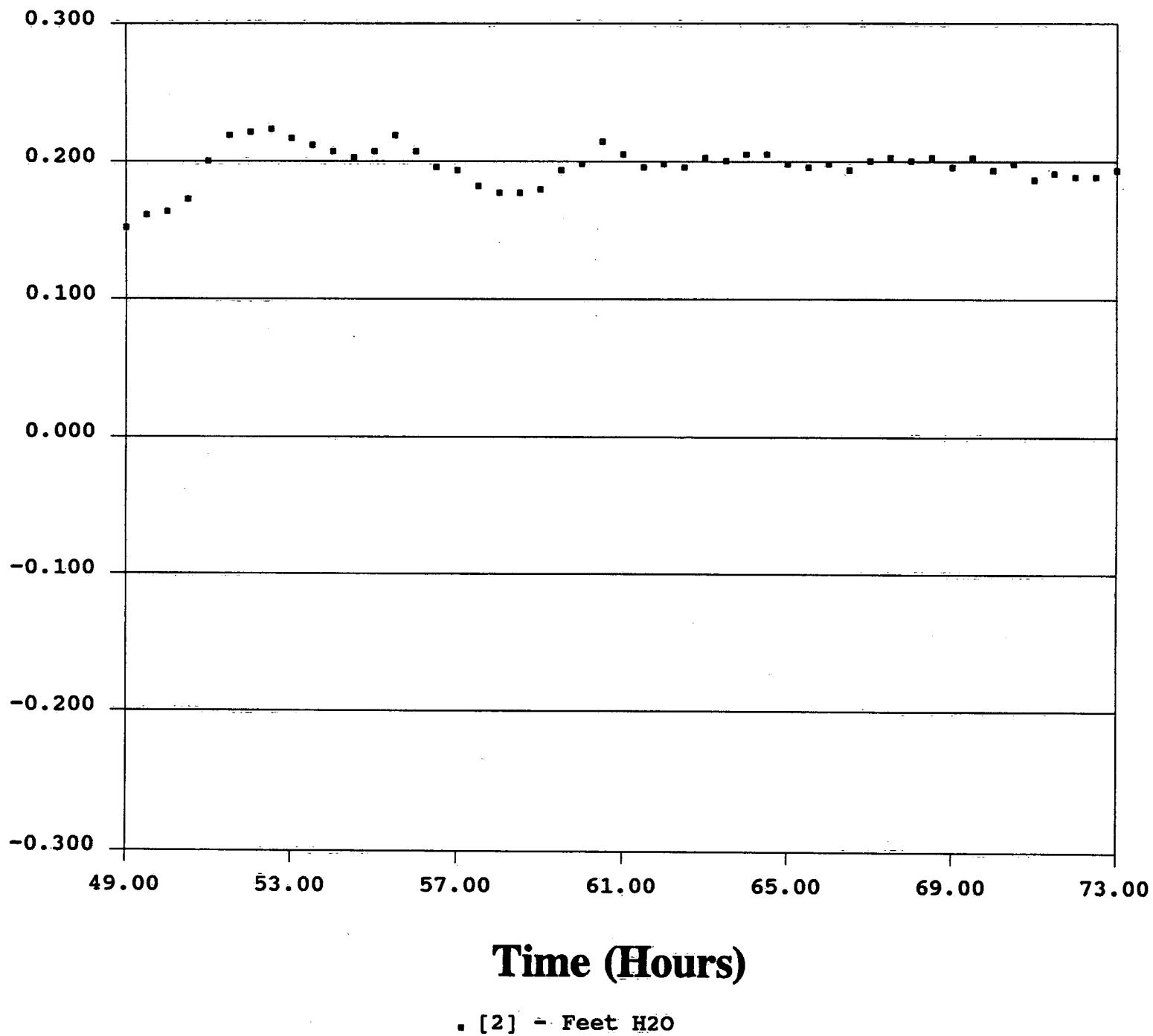
# *Well-A*

Feet H<sub>2</sub>O



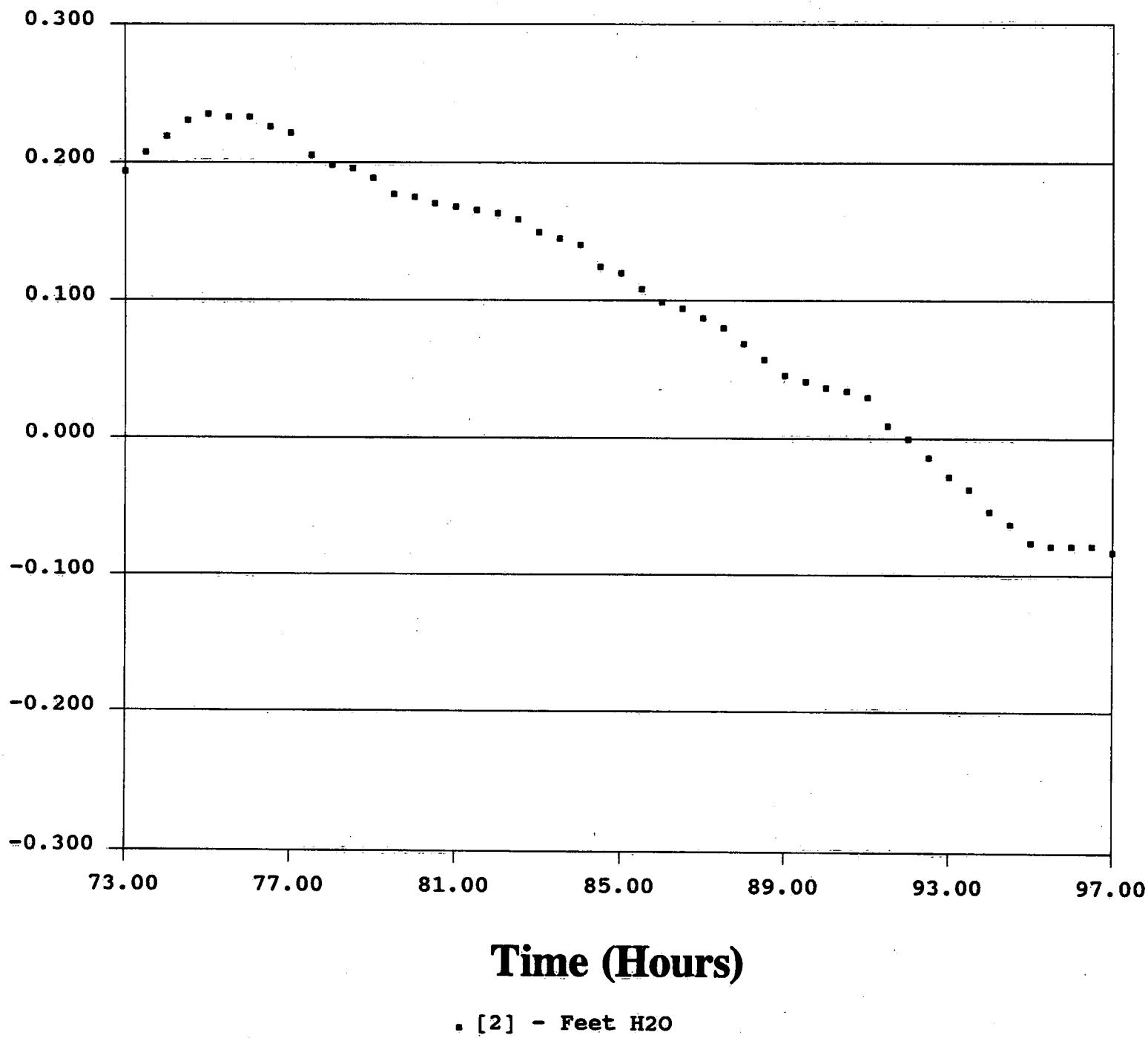
# *Well-A*

Feet H<sub>2</sub>O



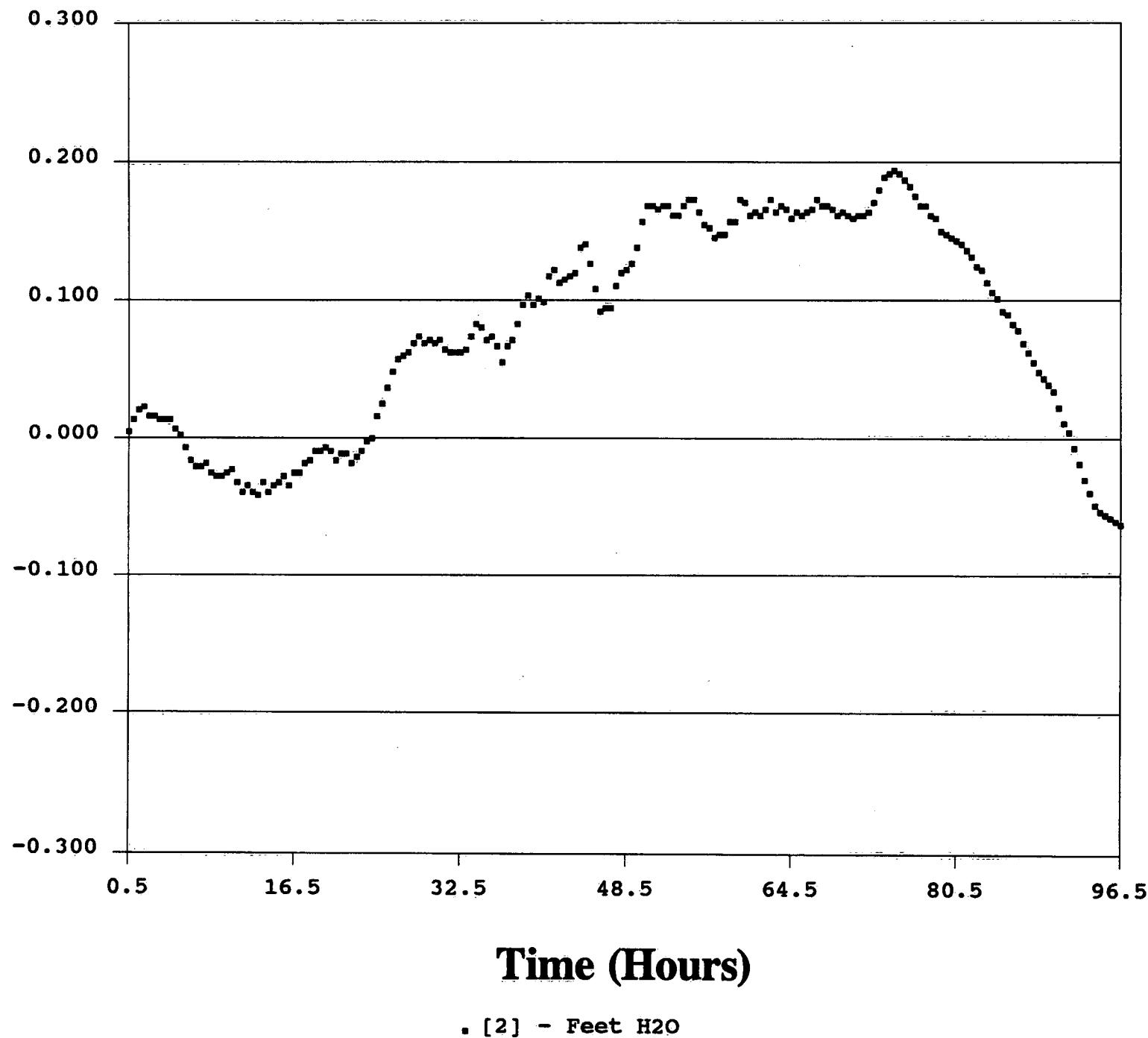
# *Well-A*

Feet H<sub>2</sub>O



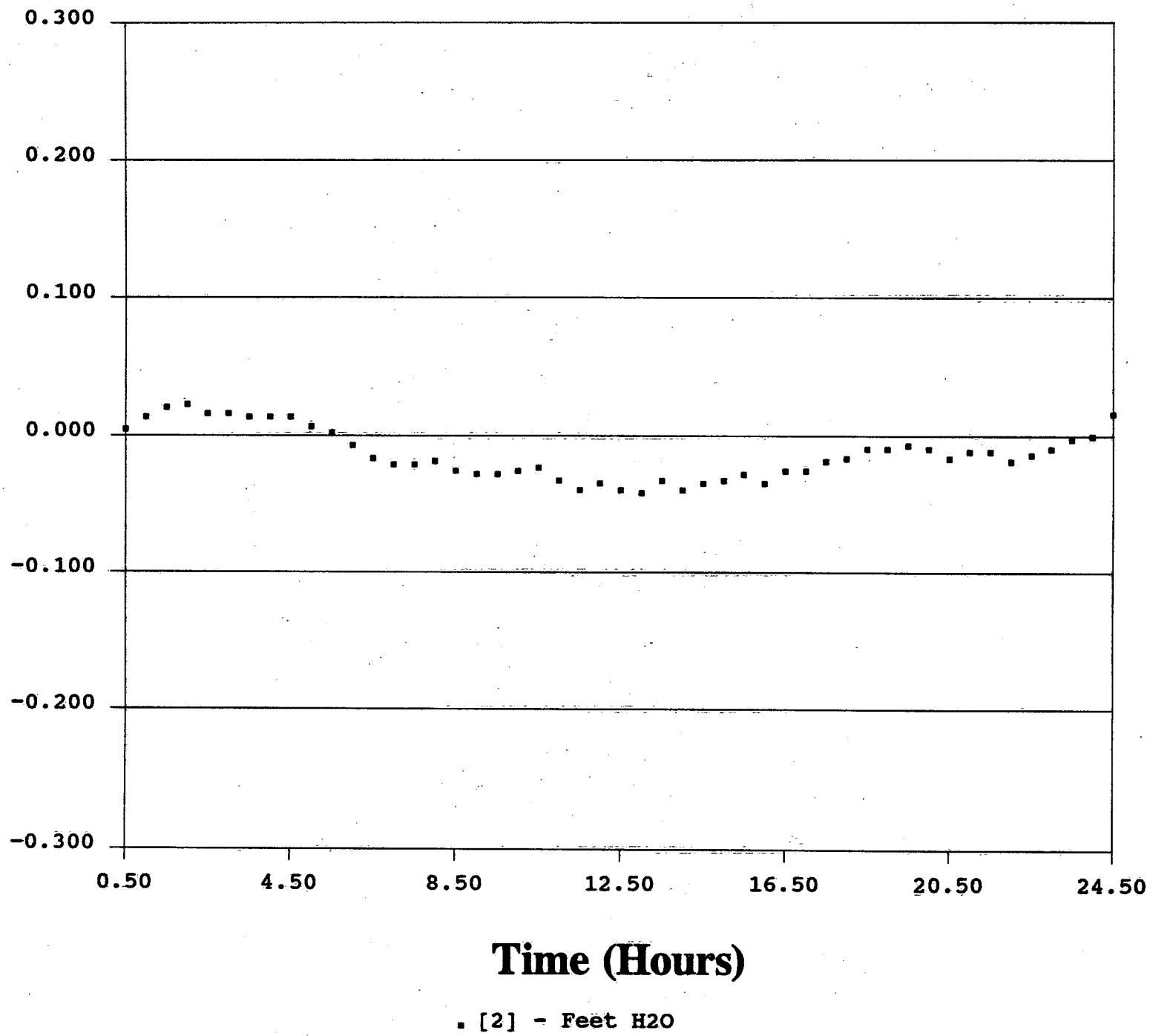
# ***MW-2614920***

Feet H<sub>2</sub>O



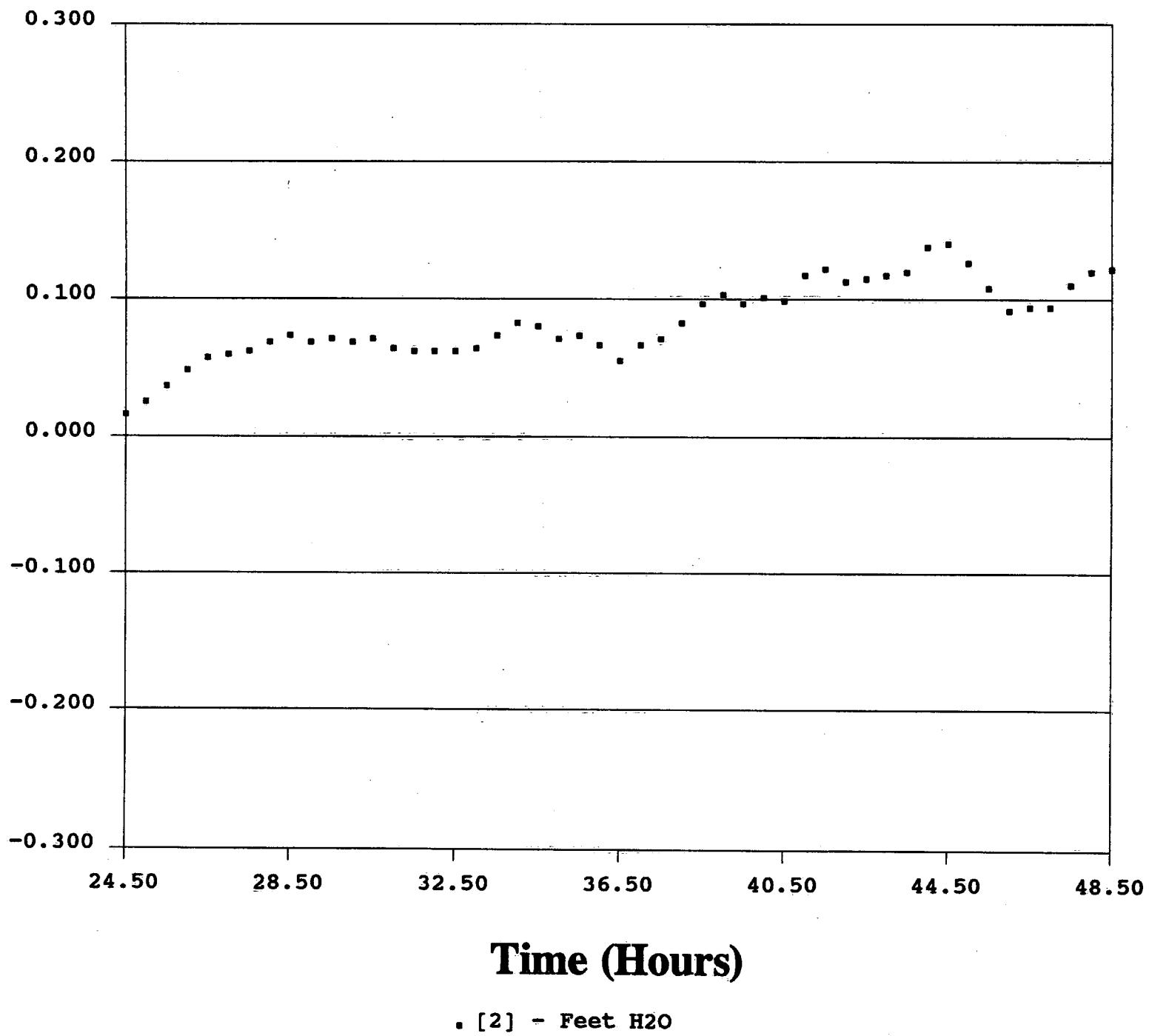
# *MW-2614920*

Feet H<sub>2</sub>O



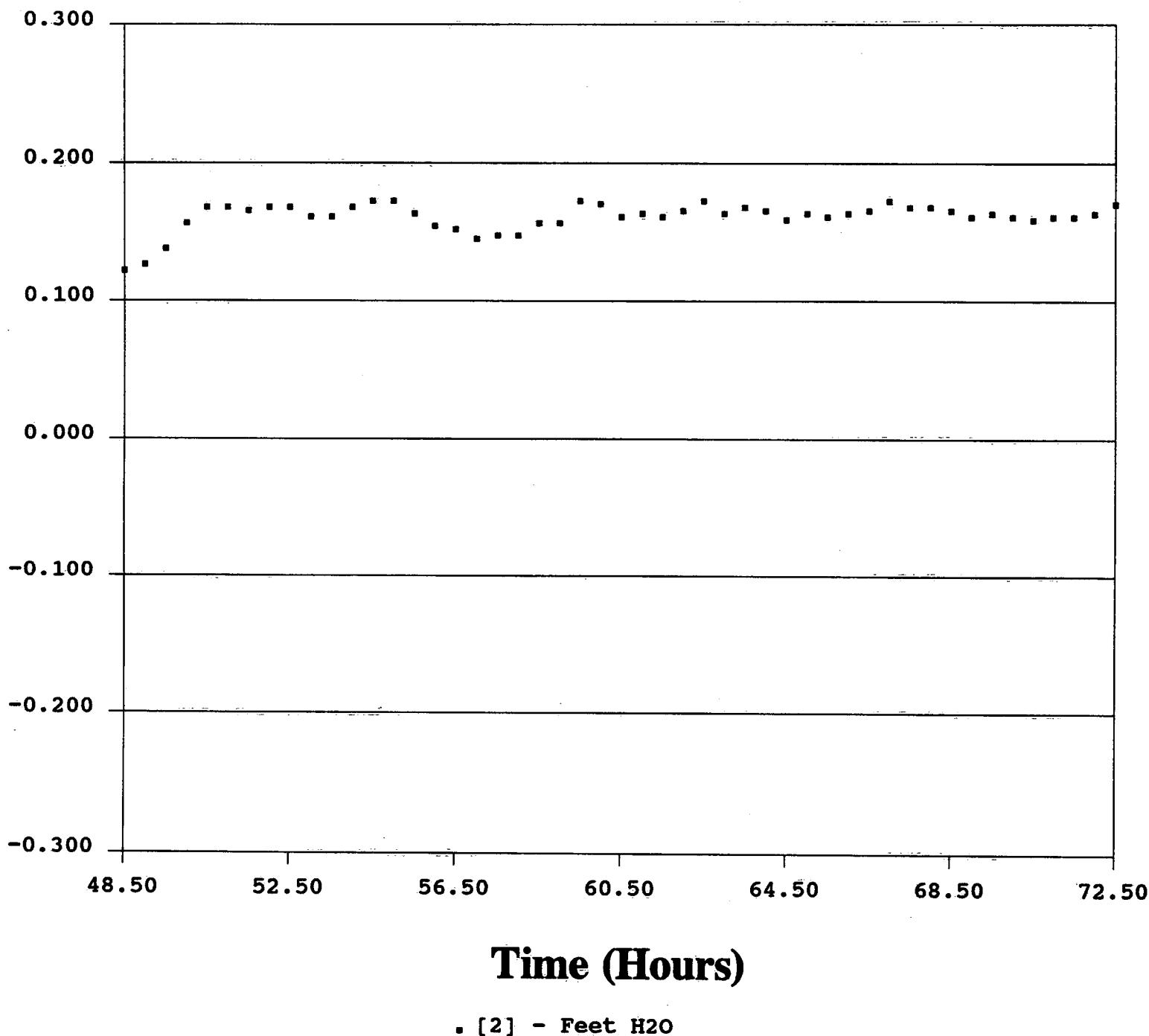
# *MW-2614920*

Feet H<sub>2</sub>O



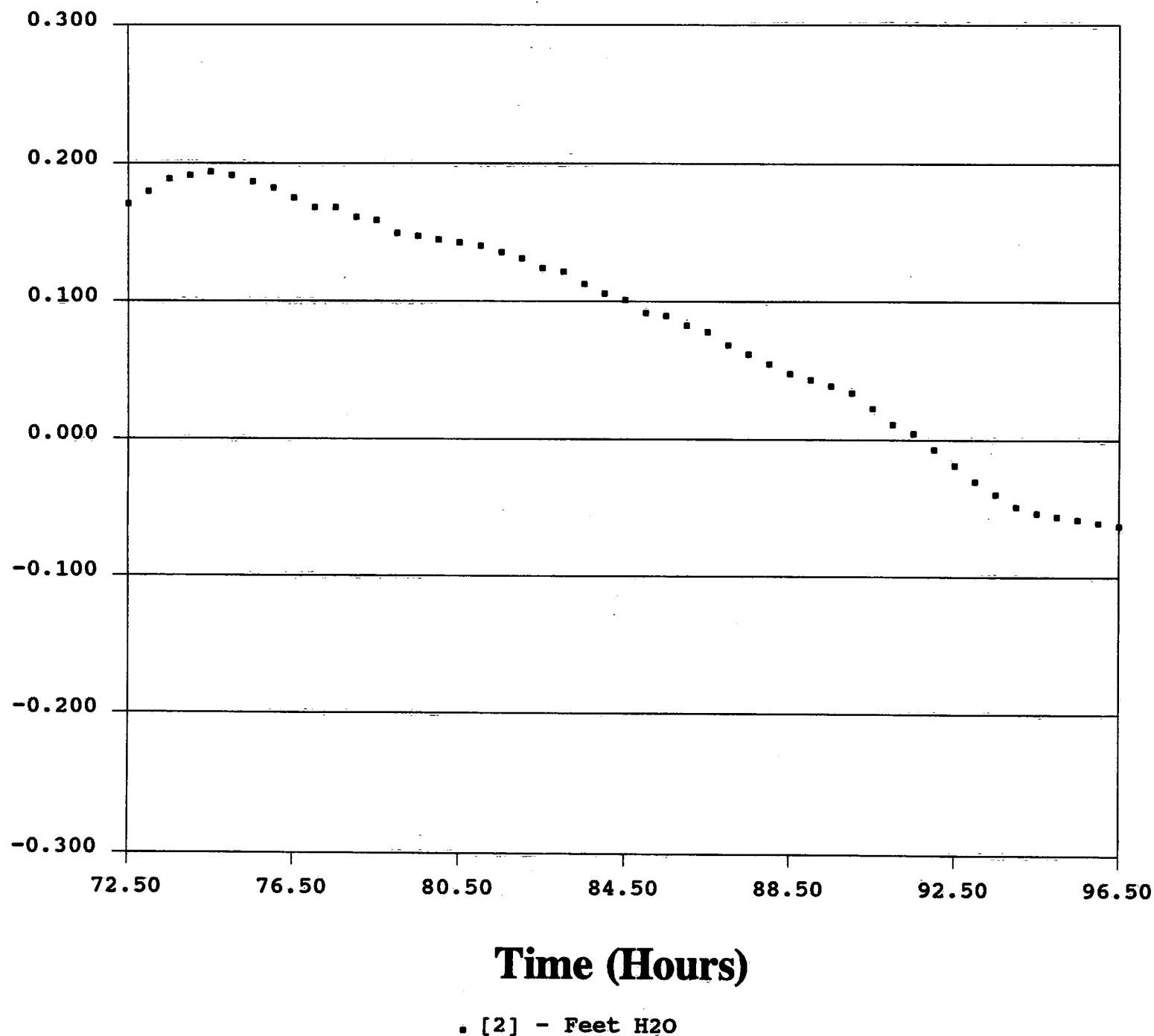
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**Feet H<sub>2</sub>O**



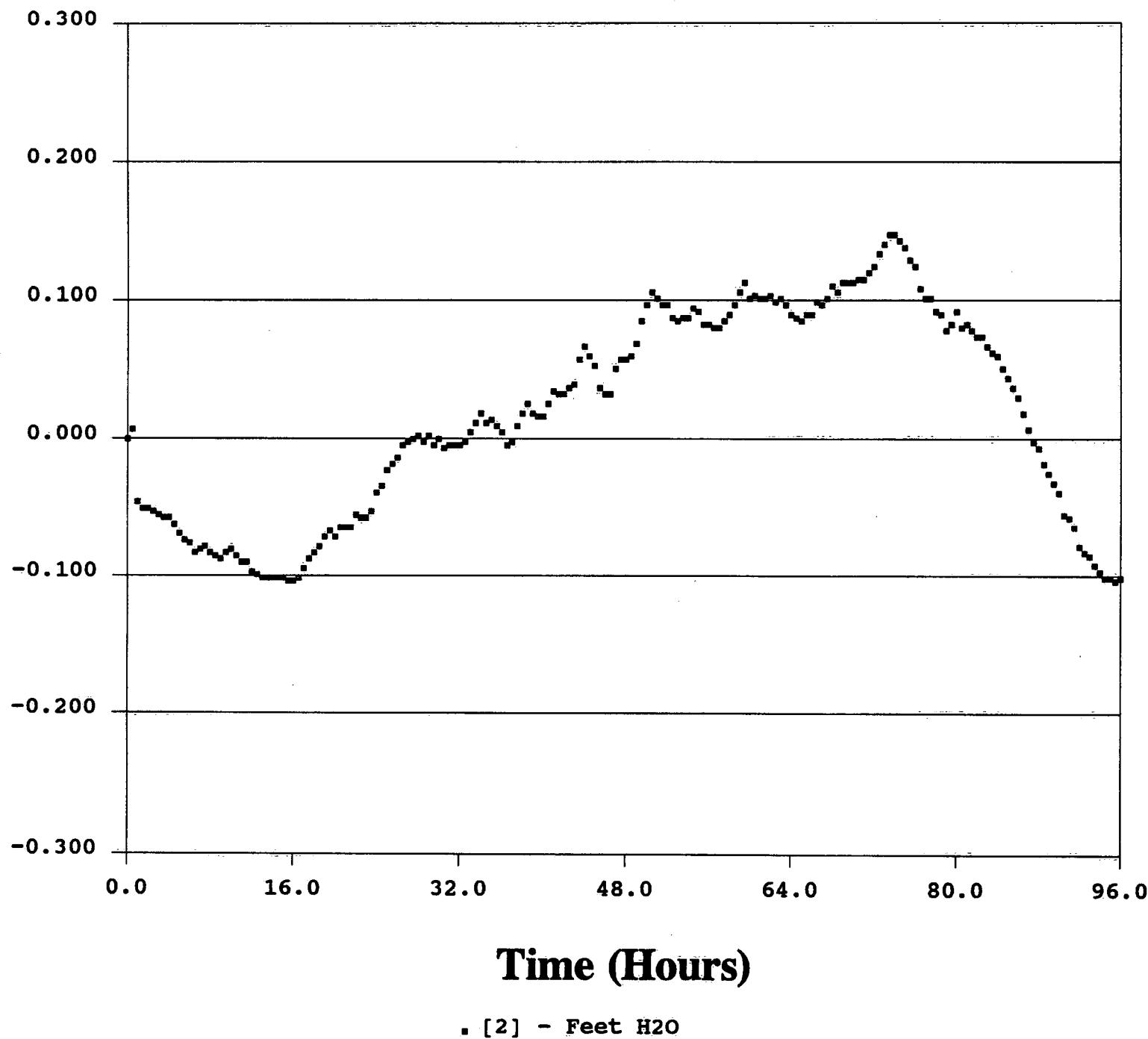
# *MW-2614920*

Feet H<sub>2</sub>O



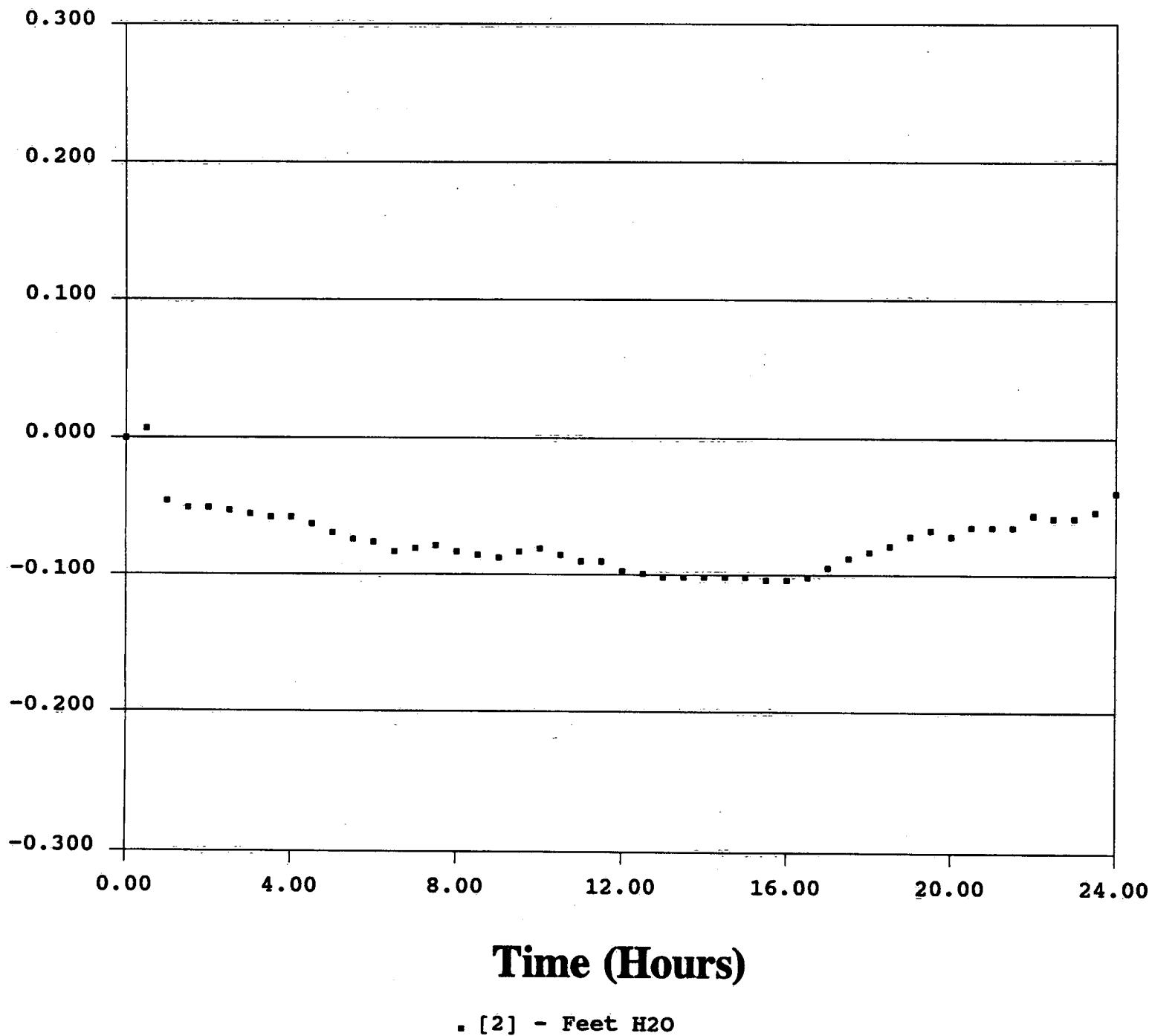
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Feet H<sub>2</sub>O



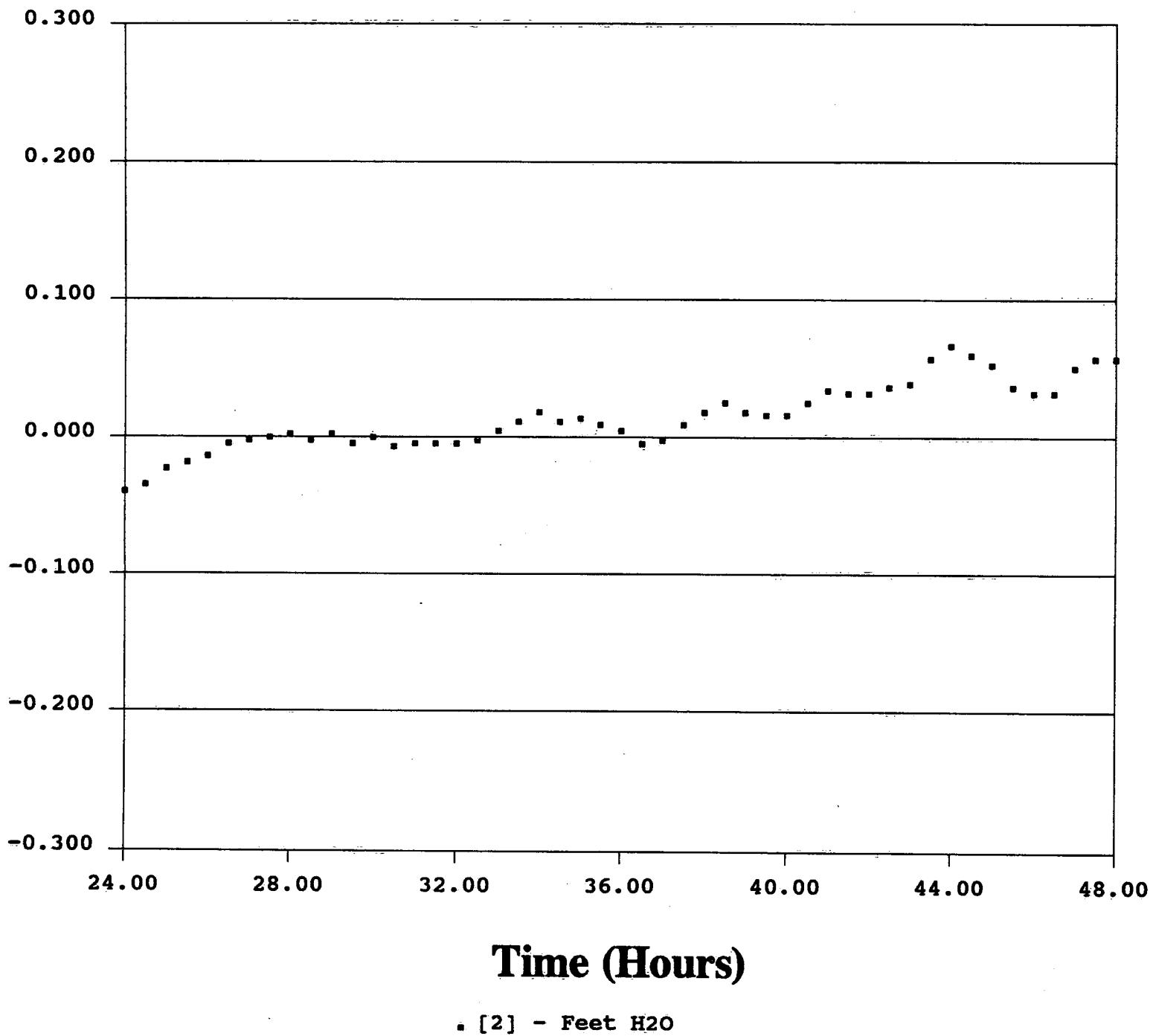
# ***MW-BBDC3***

**Feet H<sub>2</sub>O**



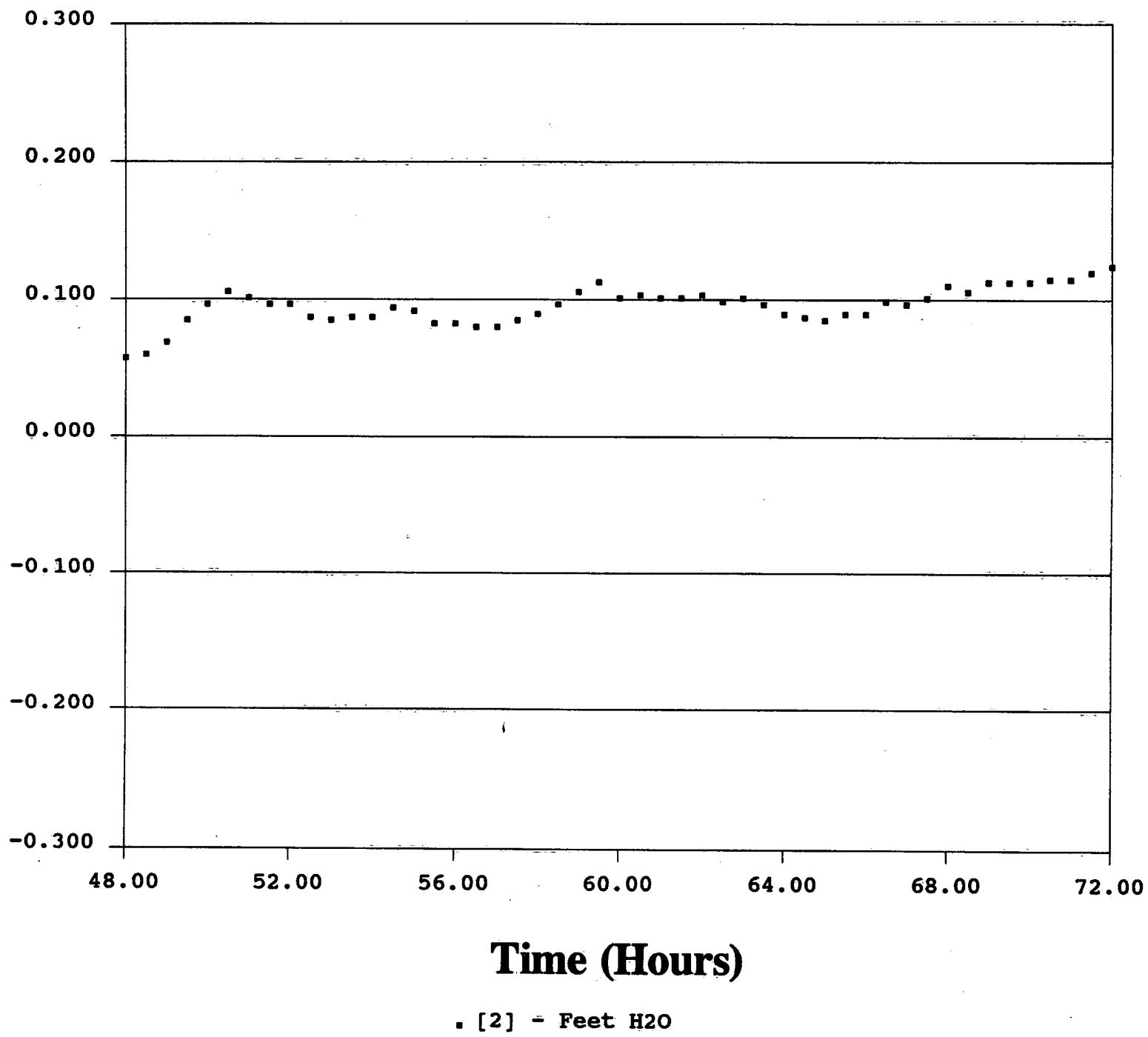
# *MW-BBDC3*

Feet H<sub>2</sub>O



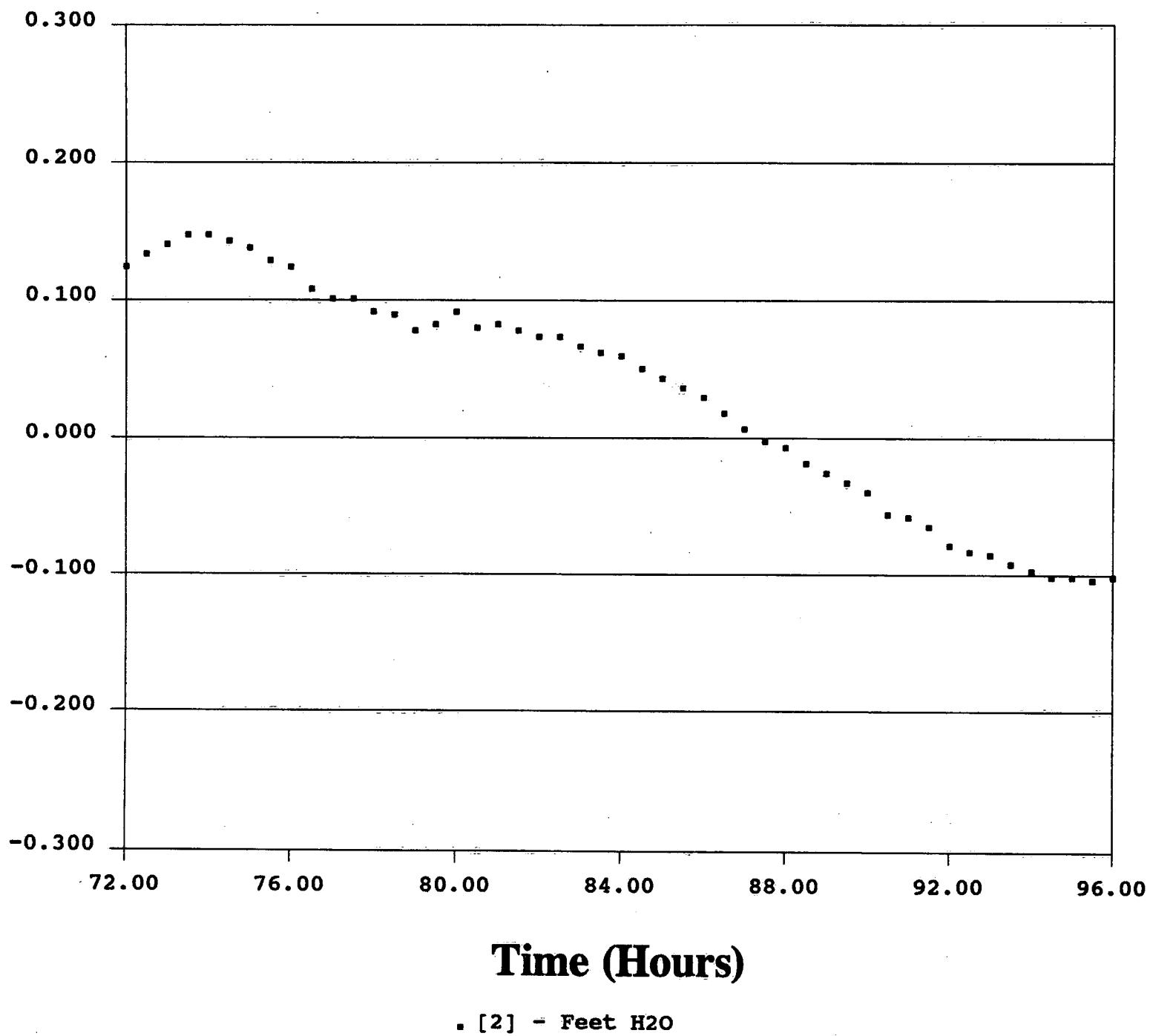
# ***MW-BBDC3***

Feet H<sub>2</sub>O



# ***MW-BBDC3***

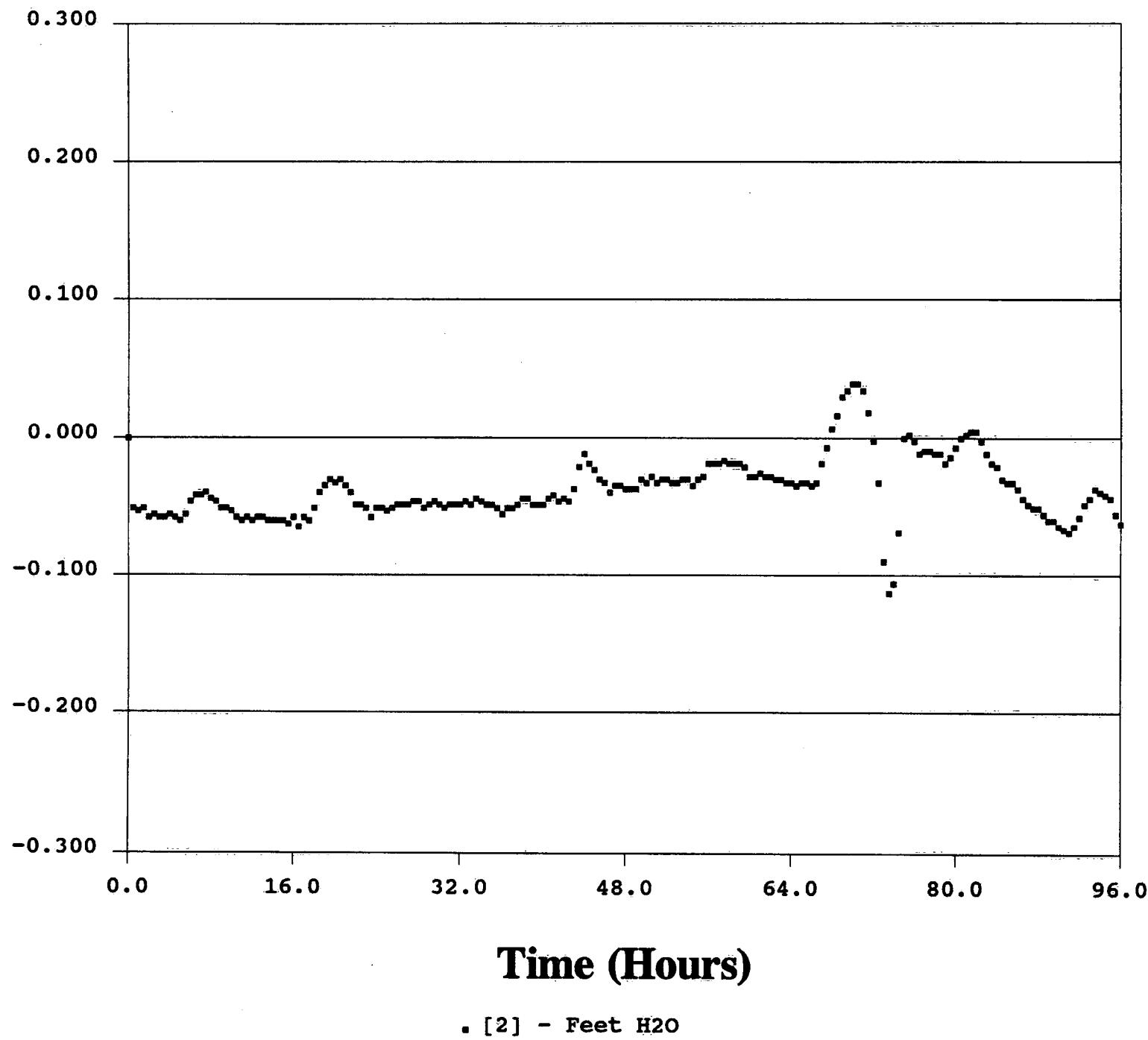
**Feet H<sub>2</sub>O**



• [2] - Feet H<sub>2</sub>O

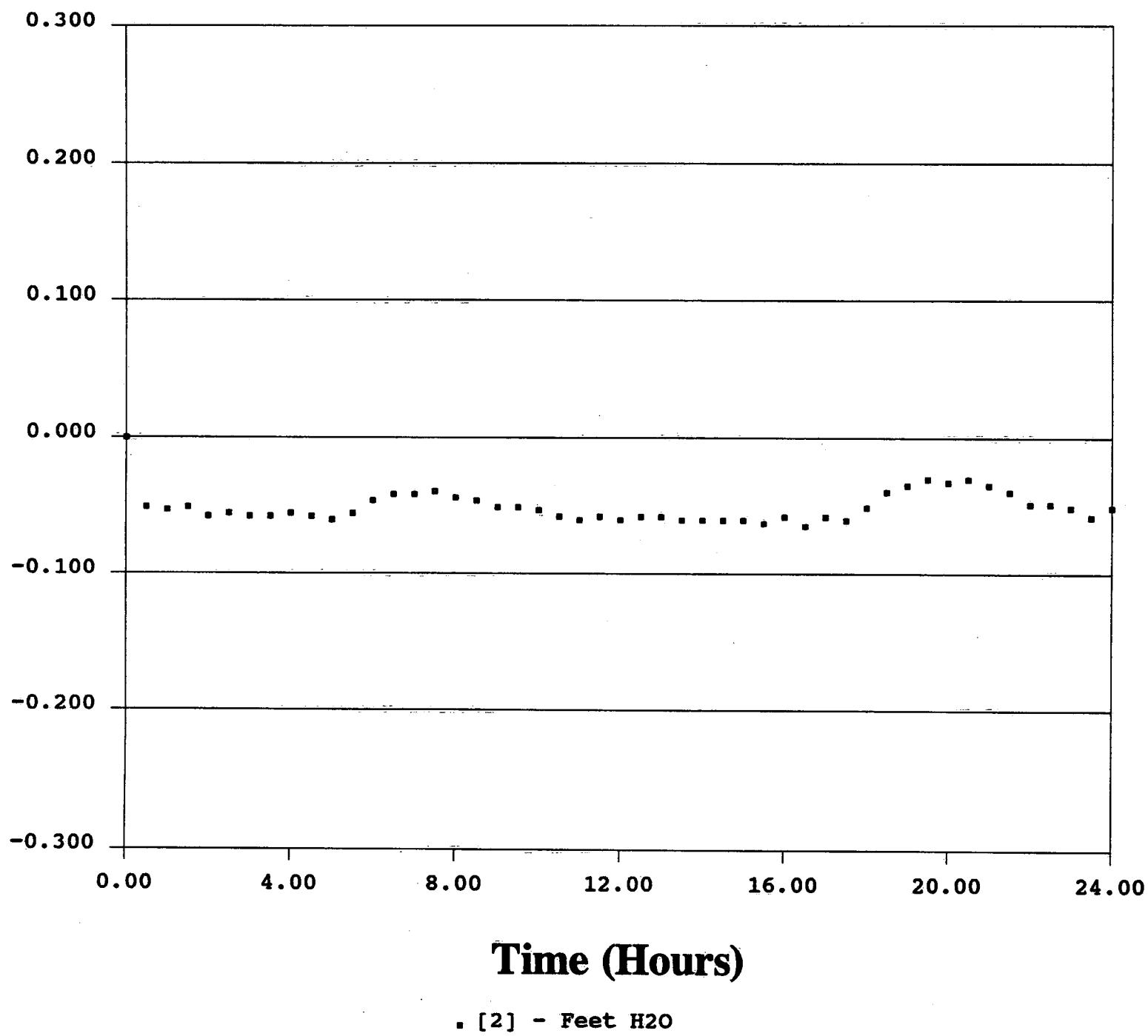
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Feet H<sub>2</sub>O



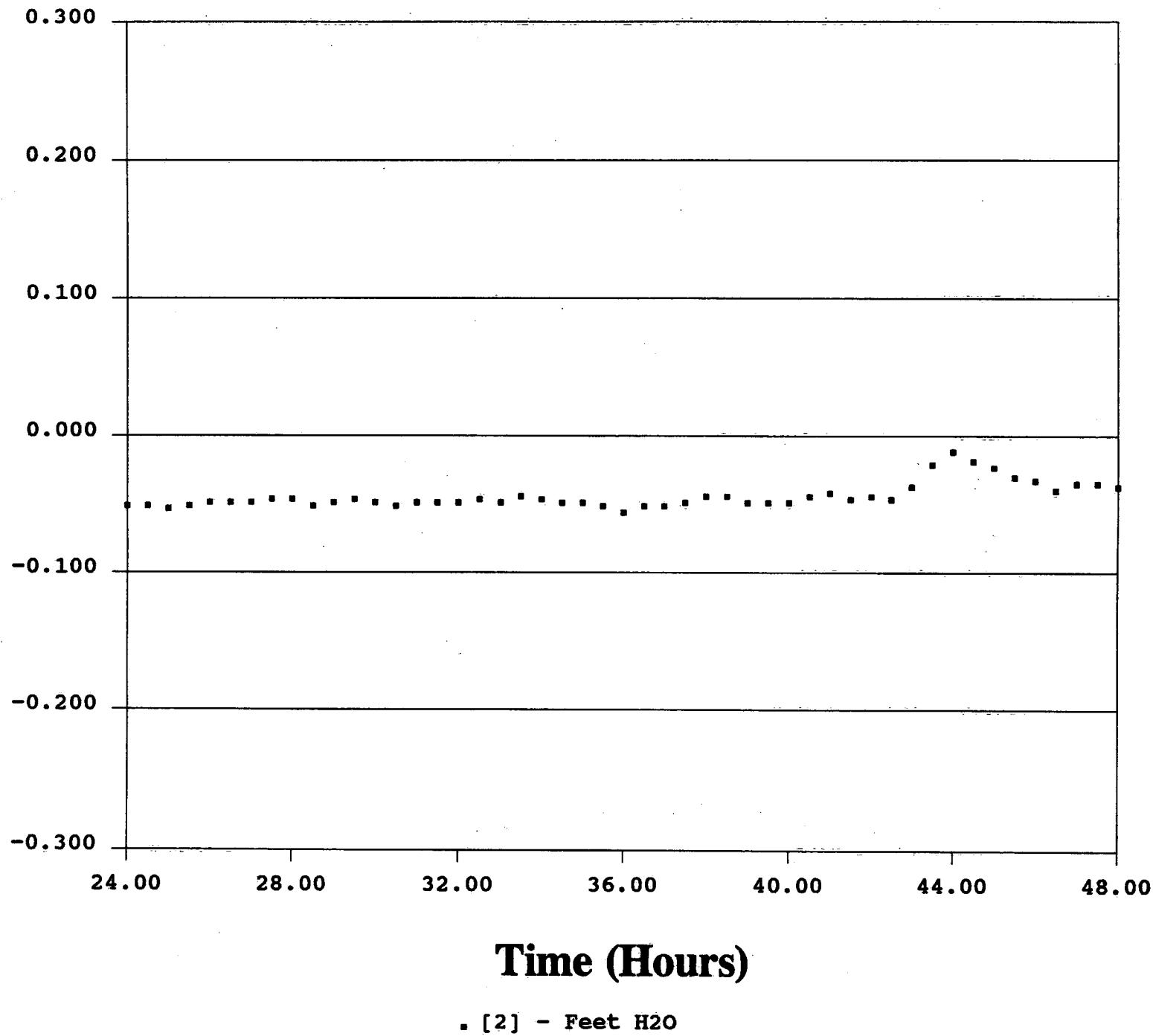
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**Feet H<sub>2</sub>O**



# ***MW-LBMW3***

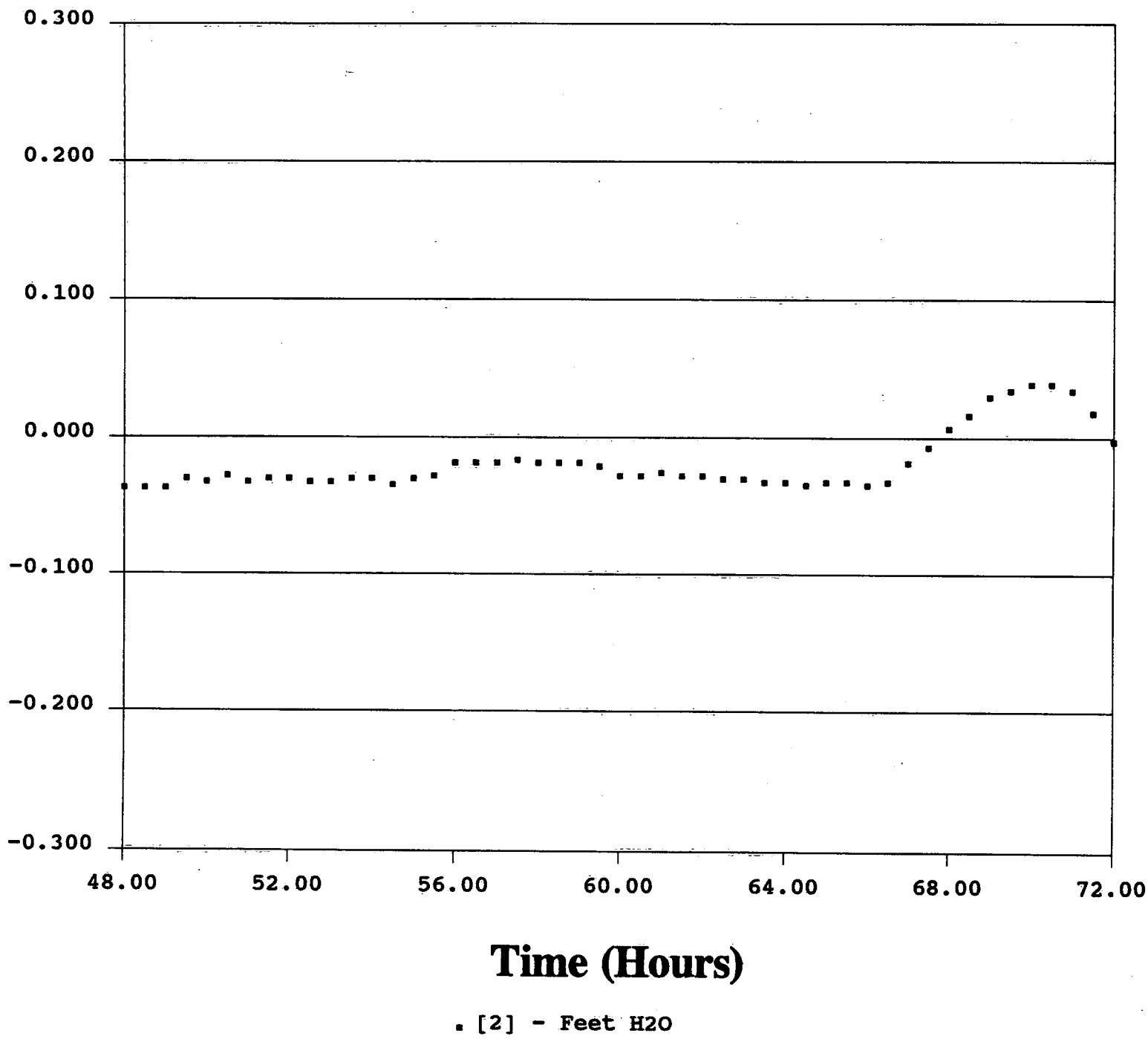
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• [2] - Feet H<sub>2</sub>O

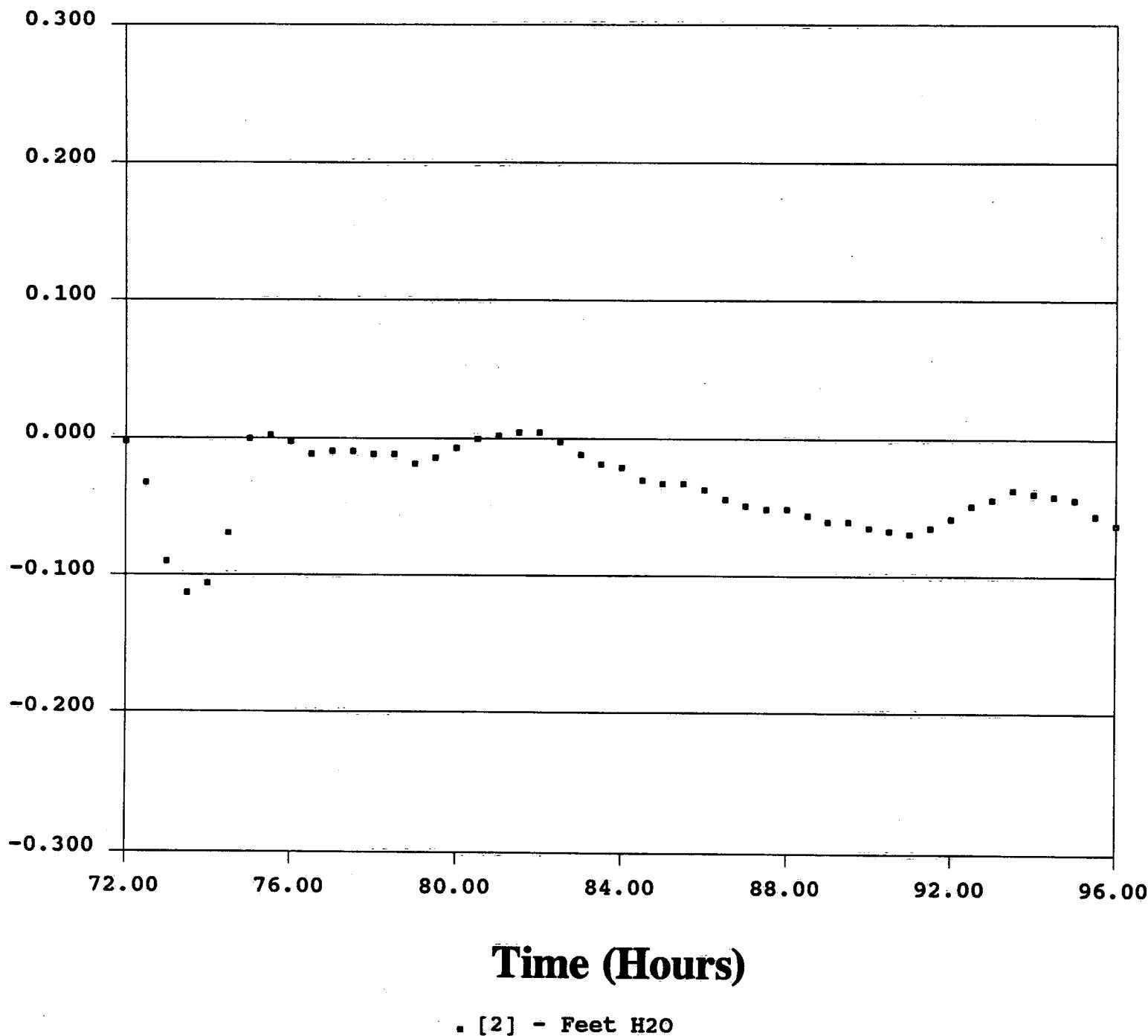
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**Feet H<sub>2</sub>O**



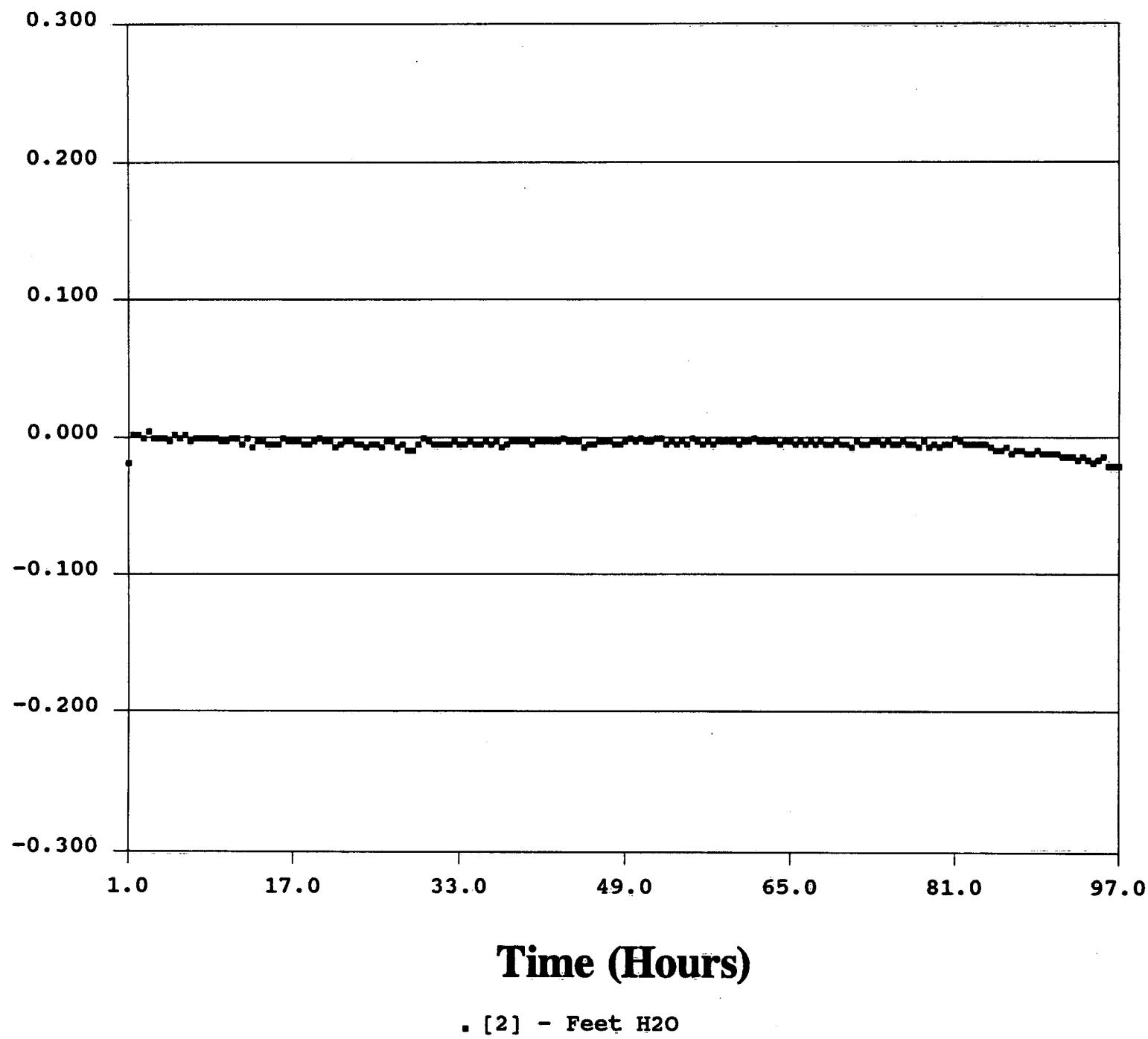
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Feet H<sub>2</sub>O



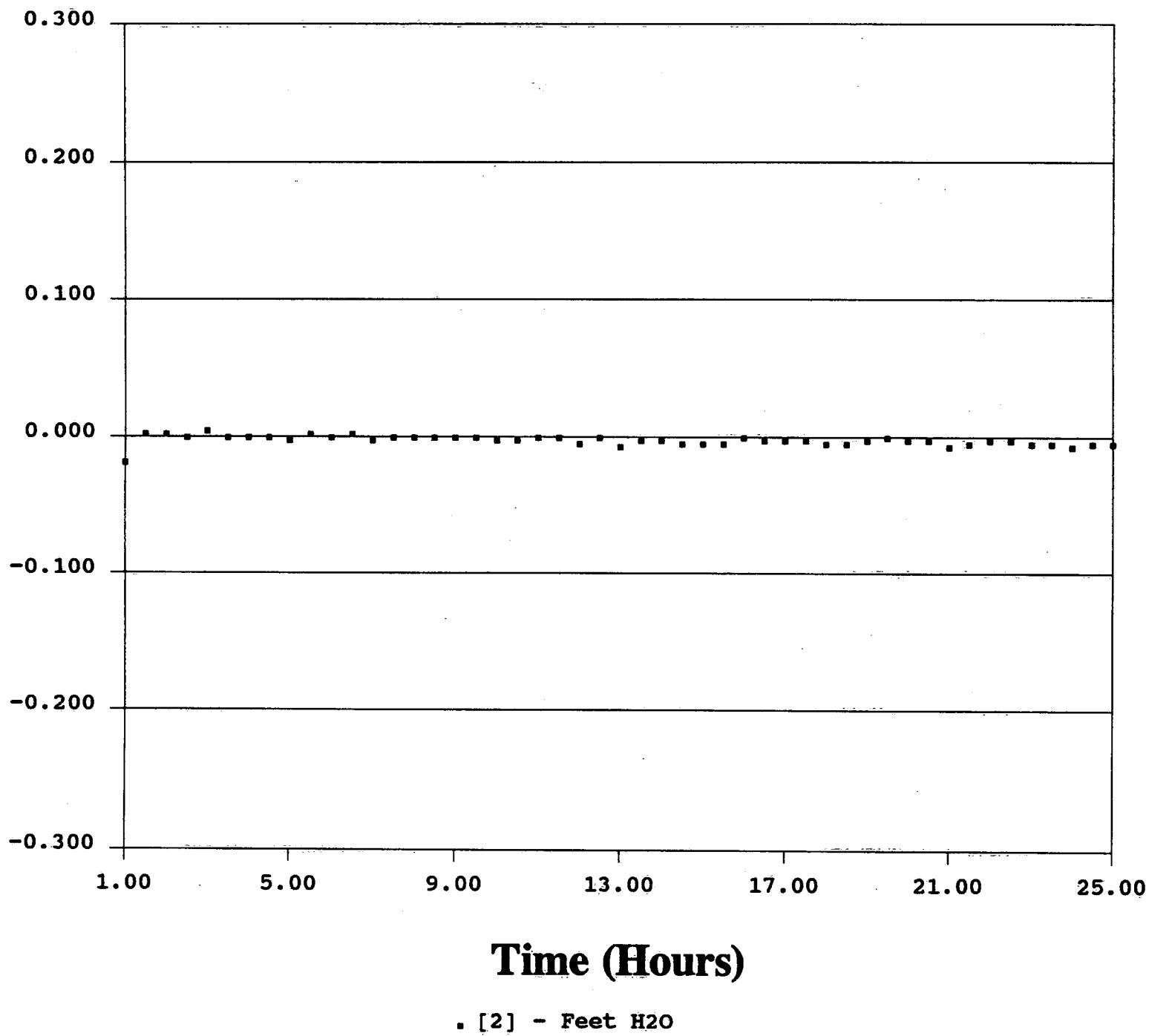
# ***MW-29WA***

**Feet H<sub>2</sub>O**



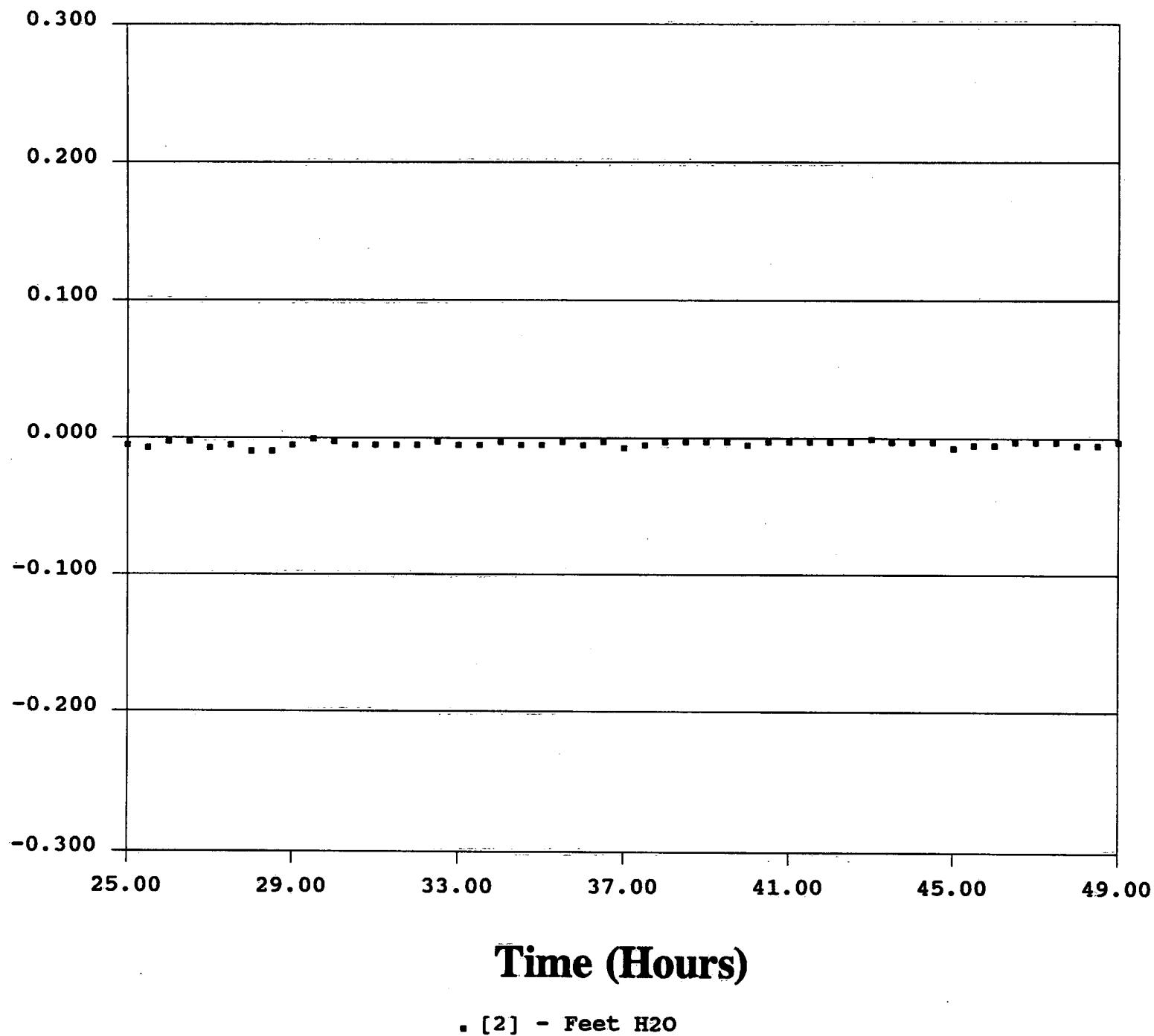
# **MW-29WA**

Feet H<sub>2</sub>O



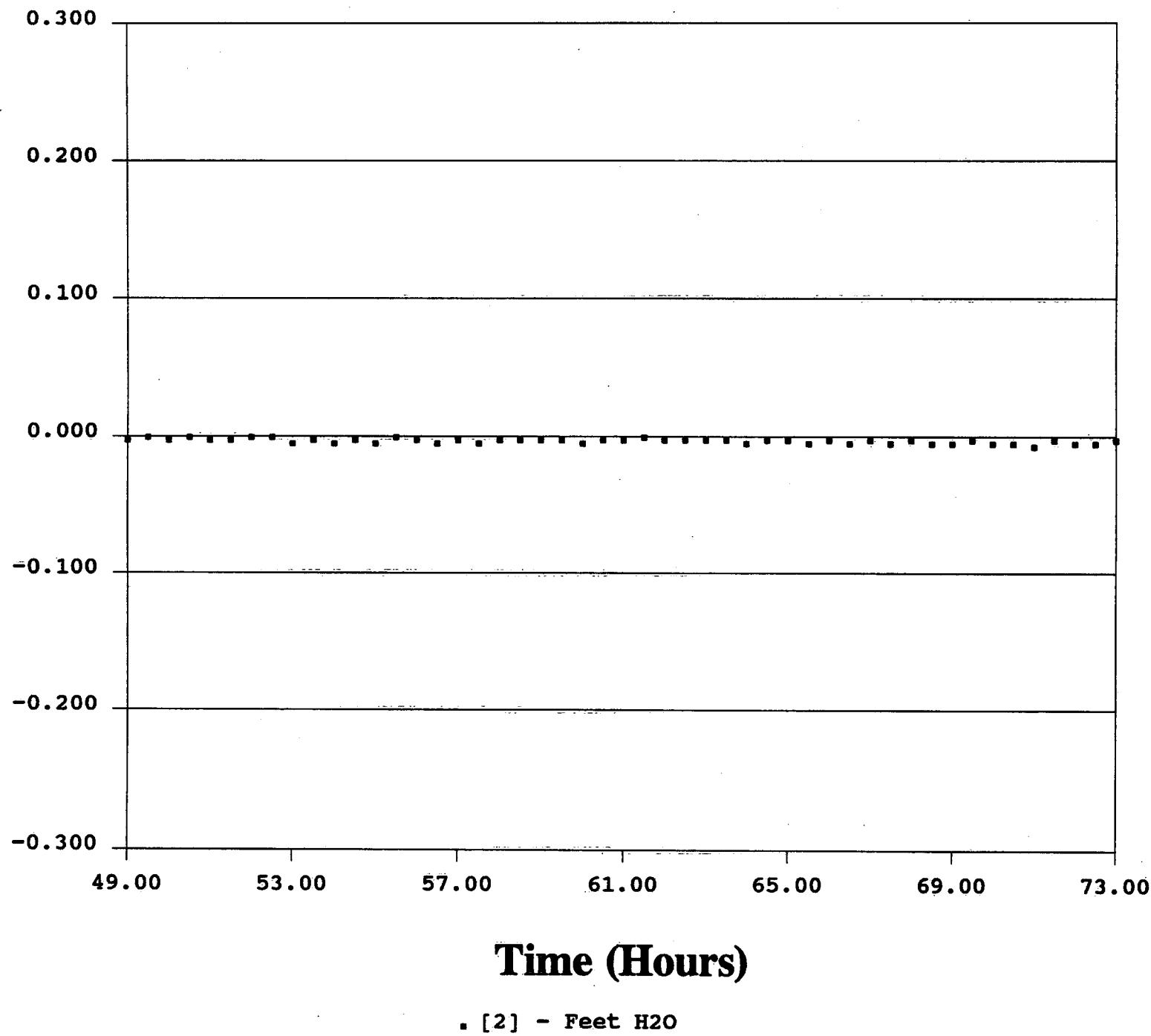
# ***MW-29WA***

**Feet H<sub>2</sub>O**



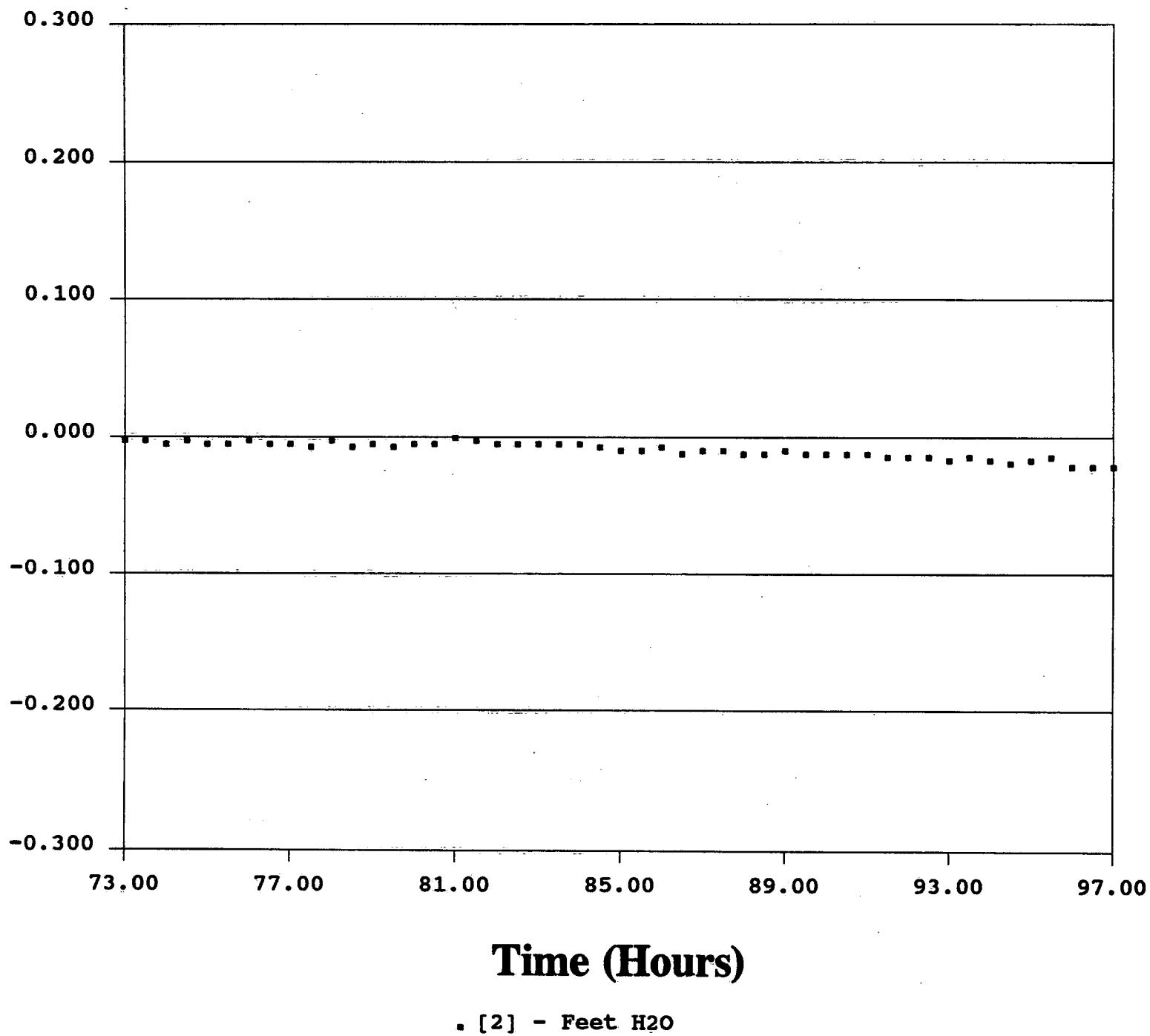
# **MW-29WA**

**Feet H<sub>2</sub>O**



# **MW-29WA**

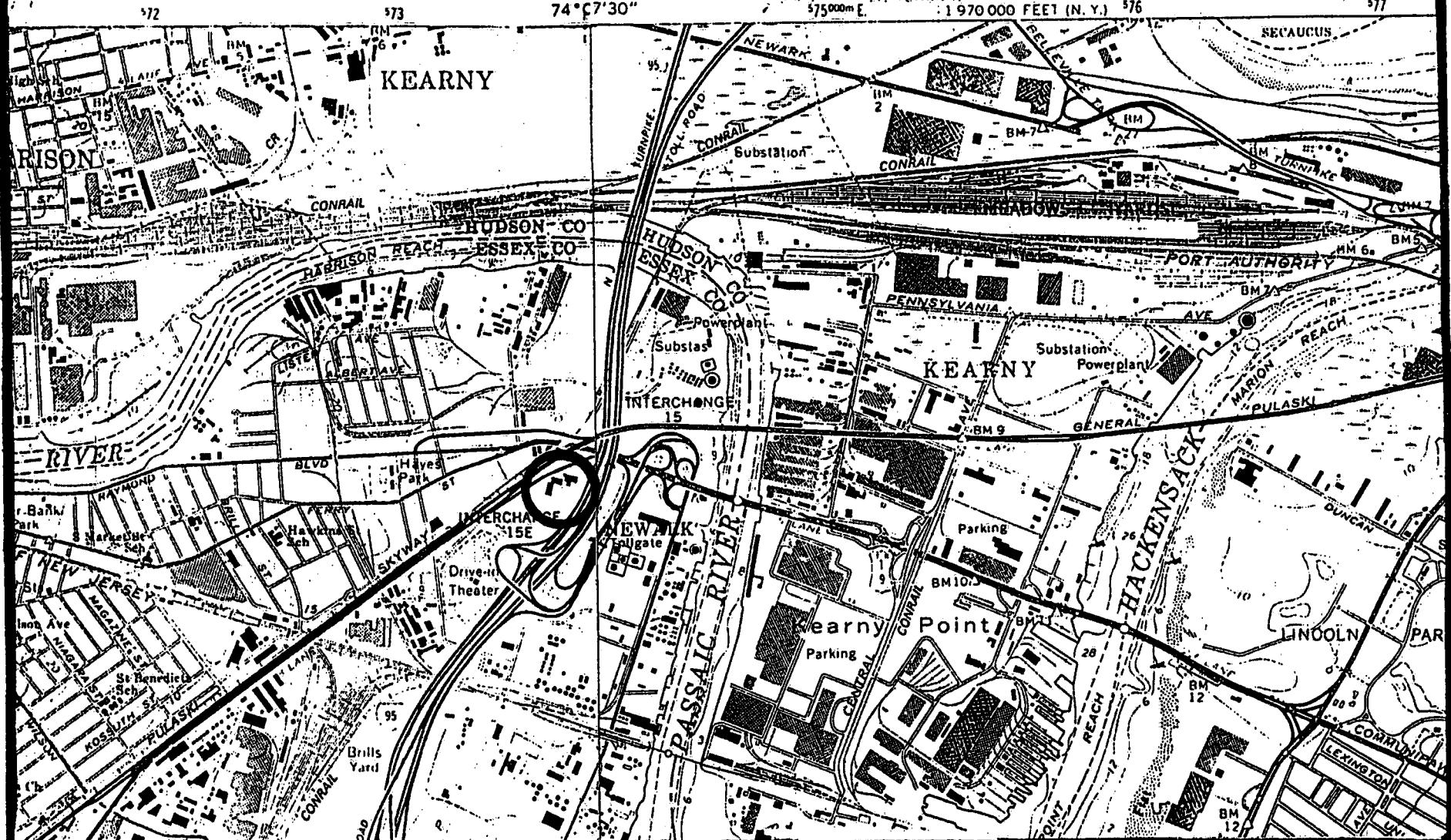
**Feet H<sub>2</sub>O**



**ATTACHMENT D**  
**SITE LOCATION PLAN**

ELIZABETH QUADRANGLE  
NEW JERSEY - NEW YORK  
7.5 MINUTE SERIES (TOPOGRAPHIC)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
GEOLOGICAL SURVEY



Roy F. Weston, Inc.  
FEDERAL PROGRAMS DIVISION

IN ASSOCIATION WITH RESOURCE APPLICATION, INC.  
C.C. JOHNSON & MALHOTRA, P.C., R.E. SARRIERA ASSOCIATES,  
PRC ENVIRONMENTAL MANAGEMENT, AND GRB ENVIRONMENTAL SERVICES, INC.

EPA PM  
Joseph Cosentino

START PM  
John F. Brennan

Bayonne Barrel

**ATTACHMENT E**  
**MONITORING WELL LOCATION DATA**

**TABLE A**  
**BAYONNE BARREL AND DRUM, NEWARK, NJ**  
**MONITORING WELL ELEVATIONS**

MONITORING WELL NO.	TOP CASING/RIM ELEVATION	TOP CASING/TOP PVC ELEVATION	GROUND ELEVATION
LB MW 1	10.52	10.48 (PVC)	7.62 (GRND)
LB MW 2	9.67	9.44 (PVC)	7.97 (GRND)
LB MW 3	7.40	7.23 (PVC)	5.54 (GRND)
BBD-C1	24.42	24.19 (PVC)	22.06 (GRND)
BBD-C2	12.45	12.22 (PVC)	9.57 (GRND)
BBD-C3	8.31	8.27 (PVC)	6.65 (GRND)
BBD-C4	22.99	21.92 (PVC)	19.13 (GRND)
BBD-C5	9.47	9.22 (STEEL)	6.75 (GRND)
MW-A	12.26	11.43 (PVC)	9.00 (GRND)
MW 29 WA	13.51	13.24 (PVC)	10.12 (GRND)
2614909-5	11.38	10.82 (PVC)	7.99 (GRND)
2614920	14.86	14.66 (PVC)	12.36 (GRND)

**TABLE B**  
**BAYONNE BARREL AND DRUM, NEWARK, NJ**  
**MONITORING WELL LOCATIONS**

MONITORING WELL NO.	NORTHING	EASTING	LATITUDE	LONGITUDE
LB MW 1	692,446.980	596,043.930	40° 44' 01.7"	74° 07' 30.0"
LB MW 2	692,431.078	595,805.037	40° 44' 01.6"	74° 07' 33.1"
LB MW 3	691,998.567	595,845.306	40° 43' 57.3"	74° 07' 32.6"
BBD-C1	691,638.466	594,650.181	40° 43' 53.8"	74° 07' 48.1"
BBD-C2	692,098.501	595,389.118	40° 43' 58.3"	74° 07' 38.5"
BBD-C3	691,981.493	595,755.287	40° 43' 57.2"	74° 07' 33.8"
BBD-C4	691,709.301	594,951.749	40° 43' 57.3"	74° 07' 44.2"
BBD-C5	691,972.339	595,753.646	40° 43' 57.1"	74° 07' 33.8"
MW-A	691,498.530	595,456.118	40° 43' 52.4"	74° 07' 37.7"
MW 29 WA	691,862.045	595,567.456	40° 43' 56.0"	74° 07' 36.2"
2614909-5	691,553.883	595,594.261	40° 43' 52.9"	74° 07' 35.9"
2614920	691,737.660	595,280.676	40° 43' 54.8"	74° 07' 39.9"

**ATTACHMENT F**  
**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**PASSAIC RIVER TIDAL DATA**  
**GREGORY AVENUE BRIDGE**

X / nice NE  
Passaic, Gregory Avenue bridge

Shio Version 1.0

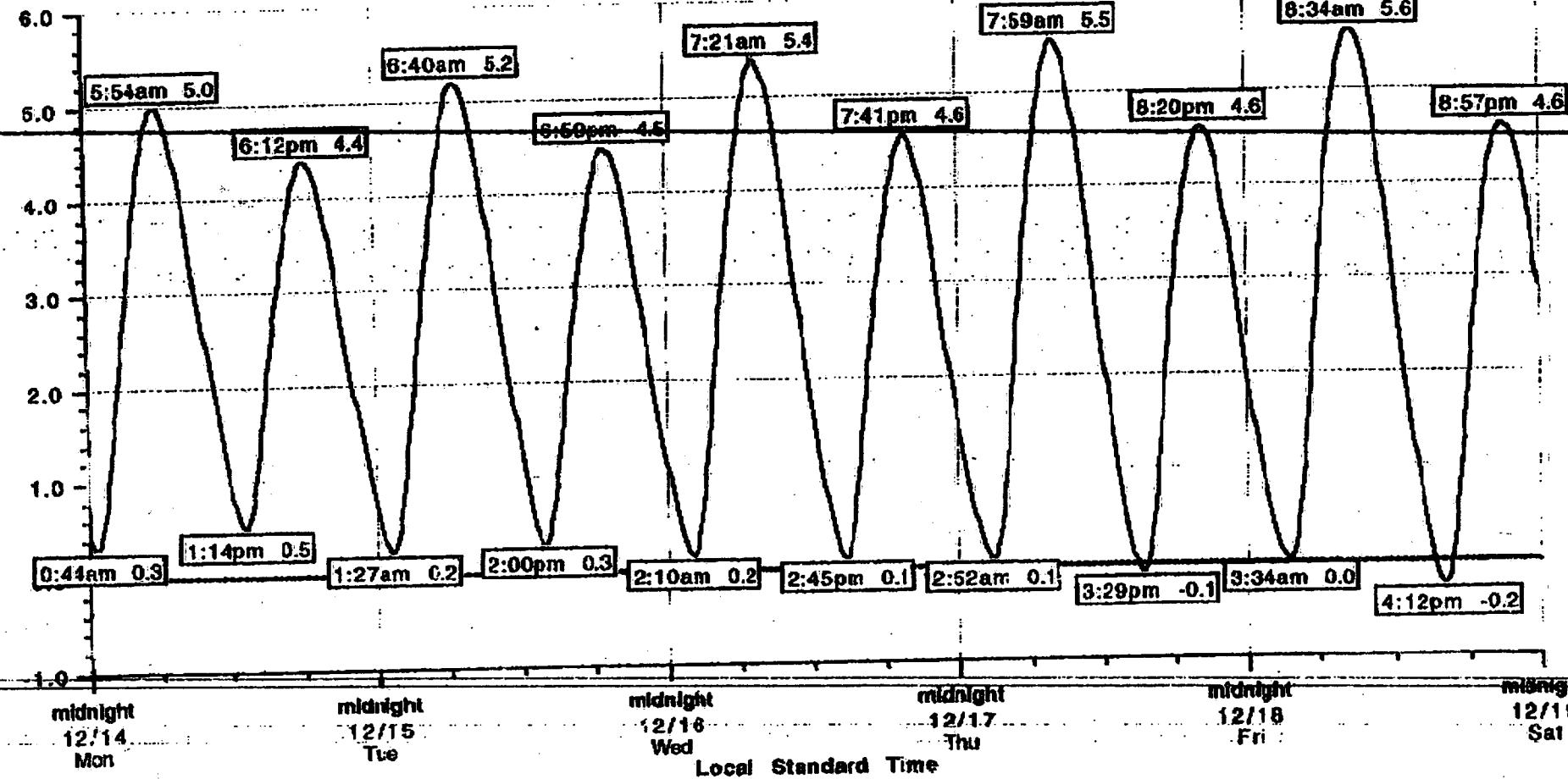


Tidal heights at Passaic, Gregory Avenue bridge, The Kills and Newark Bay  
Station No. 1627 Latitude: 40°51.00' Longitude: 074°07.00'  
Based on New York

From Mon 12/14/1998 to Fri 12/18/1998 Local Standard Time

## Heights

Height (ft)

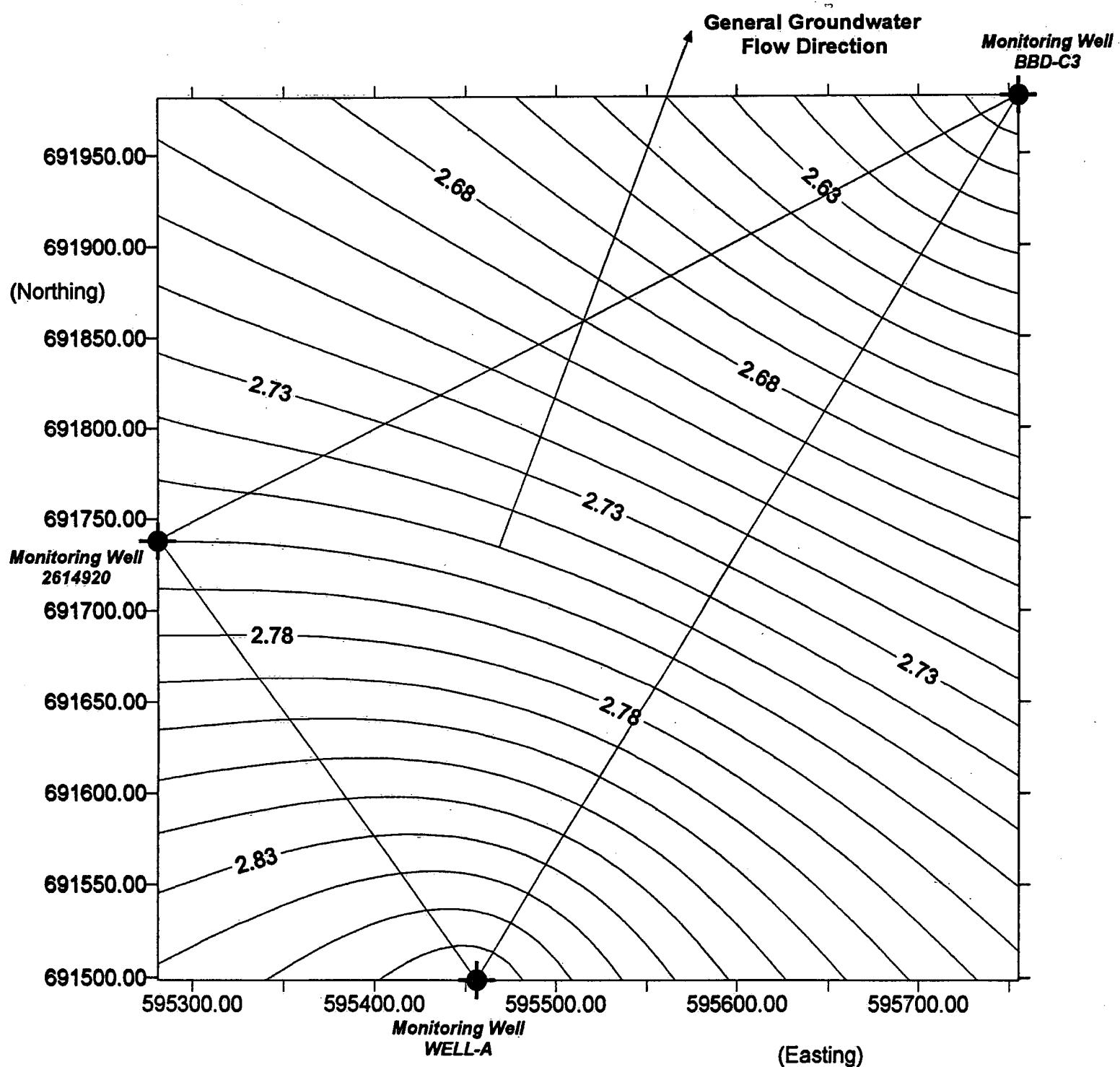


**ATTACHMENT G**  
**GROUNDWATER CONTOUR MAP**

**BAYONNE BARREL AND DRUM  
NEWARK, N.J.**

N

**GROUNDWATER CONTOUR MAP**



**ATTACHMENT H**  
**UNEDITED HOURLY PRECIPITATION DATA**  
**&**  
**UNEDITED LOCAL CLIMATOLOGICAL DATA**  
**DECEMBER 1998**

**(NEWARK AIRPORT STATION)**

## UNEDITED HOURLY PRECIPITATION TABLE

MONTH: 12/1998

NEWARK, NJ

DT	A.M. HOUR (L.S.T) ENDING AT												P.M. HOUR (L.S.T) ENDING AT												DT					
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12						
01													01												01					
02													02												02					
03													03												03					
04													04												04					
05													T	T	T	.01	05	T							05					
06																	06								06					
07																	07								07					
08													T	T	T	T	08	.04	.06	.03	.01	.02	.01	.01	08					
09																	09								09					
10																	10								10					
11																	11								11					
12																	12								12					
13																	13								13					
14																	14								14					
15																	15								15					
16																	16								16					
17													T	.01	.01		17								17					
18																	18								18					
19																	19								19					
20													T				20								20					
21																	21								21					
22																	22								22					
23																	23								23					
24	.01	T	.02	.02	.01	.01	T										24								24					
25																	25								25					
26																	26								26					
27																	27								27					
28																	28								28					
29		T	.01										T	T	T	.03	29	.03	T	.01	.07	.05	.09	.08	.12	.07	.05	.02	T	29
30		T															30								30					
31																	T	T							31					

UNEDITED LOCAL CLIMATOLOGICAL DATA [NOAA, National Climatic Data Center] MONTH: 12/1998										Station Location: NEWARK, NJ (EWR)lat: 40° 42' Lon: -74° 1' Elev(Ground): 7 Feet Time Zone: WBAN: 14734																
d a t e	Temperature (Fahrenheit)						Deg Days Base 65 Degrees		Significant Weather	Snow/Ice on Gnd(in)		Precipitation (in)		Pressure (inches of Hg)		Wind Speed=mph Dir=tens of degrees						d a t e				
	Max	Min	Avg.	Dep From Normal	Avg. Dew pt.	Avg Wet Bulb	Heating	Cooling		0600 LST	1200 LST	2400 LST	2400 LST	Avg. Station	Avg. Sea level	Resultant Speed	Res Dir	Avg. Speed	max 5-sec	max 2-min	max 1-hr					
	Depth	Water Equiv	Water Equiv	Water Equiv	Water Equiv	Water Equiv	Water Equiv	Water Equiv		0600 LST	1200 LST	2400 LST	2400 LST	Avg. Station	Avg. Sea level	Resultant Speed	Res Dir	Avg. Speed	max 5-sec	max 2-min	max 1-hr					
01	62	46	54	13	34	46	11	0	FG	0.0	-	0	0.00	29.99	30.03	11.4	30	13.5	46	33	37	33	01			
02	66	41	54	13	29	42	11	0	-	0.0	-	0	0.00	30.03	30.09	13.4	26	13.6	38	25	31	26	02			
03	70	47	59	19	39	49	6	0	-	0.0	-	0	0.00	29.85	29.90	9.9	26	10.4	32	28	26	28	03			
04	75	53	64*	24	49	55	1	0	FG HZ	0.0	-	0	0.01	29.90	29.94	8.1	28	M	28	32	22	33	04			
05	62	52	57	17	45	50	8	0	-	0.0	-	0	T	29.88	29.94	1.0	29	5.0	16	32	13	26	05			
06	68	51	60	21	50	53	5	0	FG HZ	0.0	-	0	0.01	29.84	29.89	8.6	31	13.2	36	29	29	28	06			
07	76*	49	63	24	43	52	2	0	FG HZ	0.0	-	0	0.19	30.03	30.09	5.3	7	8.2	24	11	17	34	07			
08	50	45	48	10	41	45	17	0	RA DZ FG	0.0	-	0	0.00	30.18	30.24	10.9	35	12.0	25	1	21	1	09			
09	49	38	44	6	30	38	21	0	-	0.0	-	0	0.00	30.24	30.29	8.3	27	8.8	20	28	16	28	10			
10	48	30	39	1	29	36	26	0	-	0.0	-	0	0.00	30.23	30.28	10.5	32	12.4	36	35	28	34	11			
11	48	34	41	4	26	36	24	0	-	0.0	-	0	0.00	30.33	30.37	9.1	25	9.2	23	28	20	27	12			
12	46	29	38	1	28	34	27	0	-	0.0	-	0	0.00	29.99	30.04	3.9	2	6.5	22	3	18	3	13			
13	45	35	40	3	31	37	25	0	-	0.0	-	0	0.00	30.12	30.18	11.4	2	13.0	28	3	23	3	14			
14	43	33	38	2	23	33	27	0	-	0.0	-	0	0.00	30.19	30.23	10.1	26	10.3	23	25	20	26	15			
15	50	26	38	2	27	34	27	0	-	0.0	-	0	0.00	29.86	29.91	2.6	28	5.3	18	28	14	27	16			
16	48	35	42	6	33	38	23	0	RA FG	0.0	-	0	0.02	29.66	29.71	7.6	30	9.2	24	18	33	17				
17	44	36	40	5	34	38	25	0	-	0.0	-	0	0.00	30.09	30.13	9.2	33	10.4	30	32	23	33	18			
18	44	32	38	3	19	31	27	0	-	0.0	-	0	0.00	30.25	30.29	8.6	24	9.0	28	27	22	25	19			
19	51	32	42	7	27	37	23	0	-	0.0	-	0	T	30.32	30.37	5.1	5	6.6	16	3	15	3	20			
20	50	44	47	12	34	42	18	0	DZ FG	0.0	-	0	T	30.19	30.25	3.4	17	5.2	15	19	11	18	21			
21	53	47	50	16	45	48	15	0	RA FG	0.0	-	0	T	30.19	30.25	17.7	30	23.3	47	30	36	30	22			
22	65	23	44	10	30	40	21	0	SN FG	0.0	-	0	0.07	29.93	29.97	3.8	33	6.9	28	34	23	33	23			
23	28	19	24	-10	5	19	41	0	SN FG HZ	0.0	-	0.4	0.02	30.49	30.54	30.28	34	9.4	22	30	16	1	24			
24	32	23	28	-5	14	23	37	0	-	1.0	-	0.8	0.07	30.40	30.43	3.2	27	6.3	18	32	13	25	25			
25	34	21	28	-5	12	23	37	0	-	1.0	-	0.0	0.00	30.40	30.43	4.8	27	5.6	18	25	14	27	26			
26	32	20	26	-7	15	23	39	0	-	T	-	0	0.00	30.17	30.22	3.3	23	5.8	16	22	13	22	27			
27	37	22	30	-3	19	27	33	0	FG HZ	0.0	-	0	0.00	30.28	30.34	4.3	23	6.4	21	3	18	4	28			
28	45	32	39	6	32	36	26	0	RA DZ FG	0.0	-	0	T	30.07	30.12	5.1	3	6.4	21	3	18	4	29			
29	40	36	38	6	38	38	27	0	-	0.0	-	0	0.63	29.73	30.27	7.9	4	8.8	20	35	14	1	29			
30	40	18	29	-3	14	24	36	0	FG	0.0	-	T	0.01	29.63	30.79	17.9	33	19.3	44	34	34	34	30			
31	26	17	22*	-10	9	19	43	0	-	0.0	-	T	T	30.06	30.12	10.1	27	10.4	21	26	17	27	31			
49.3 34.4 41.9 ----- 29.2 37.0 22.9 .0 <Monthly Averages										Totals>		1.03	30.07	30.17	5.1	30.4	9.6	<Monthly Average								
6.4 5.3 5.9 ----- <----- Departure From Normal----->										-2.42																
Degree Days      Monthly      Season to Date:										Greatest 24-hr Precipitation: 0.63 date: 29-30 Greatest 24-hr Snowfall: date: 23 Greatest Snow Depth: 0 date:								Sea Level Pressure Date Time Maximum: 30.66 23 1036 Minimum: 29.37 30 0521								
Heating: 711 -188 Cooling: 0 0										Number of Days with ----> Max temp >= 90: 0 Max temp <= 32: 4 Thunderstorms : 0		Max temp <= 32: 14 Min temp <= 0 : 0 Heavy Fog : 0		Precipitation >= .01 inch: 0 Precipitation >= .10 inch : 0 Snowfall >= 1.0 inch : 0												

PUBLICATION DATE: 02/12/1985

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## NEW JERSEY 853 0743

**U.S. DEPARTMENT OF COMMERCE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
NATIONAL OCEAN SERVICE**

## TIDAL BENCH MARKS

## POINT NO POINT, PASSAIC RIVER

LATITUDE:  $40^{\circ} 43.9' N$       LONGITUDE:  $74^{\circ} 7.0' W$   
 NOAA CHART: 12337      USGS QUAD: JERSEY CITY

To reach the tidal bench marks at Kearny, exit 15E on the New Jersey Turnpike, proceed east on Routes 1 & 9, cross the Passaic River and take the first road to the right (Jacobus Avenue), continue north and west after crossing the intersection. The bench marks are in the near area and the gage and staff were at the NE corner of the bridge over the Passaic River.

.....

## BENCH MARK STAMPING: 0743 A 1975

MONUMENTATION: Survey Disk  
 AGENCY/DISK TYPE: NOS Tidal Bench Mark  
 SETTING CLASSIFICATION: Building Wall

The bench mark is north of the Routes 1 & 9 bridge over the Passaic River, set vertically into the SW corner on the west face of a three-story concrete and metal building on the property of the Tompkins Tidewater Terminal, 164.5 feet (50.1 m) SE of the SW corner of a two-story building, 86.0 feet (26.2 m) east of the bulkhead, and 76.8 feet (23.4 m) NE of the end of a concrete wall on the NW corner of an old abutment of the abandoned bridge.

## BENCH MARK STAMPING: 0743 B 1975

MONUMENTATION: Survey Disk  
 AGENCY/DISK TYPE: NOS Tidal Bench Mark  
 SETTING CLASSIFICATION: Copper-coated Steel Rod

The bench mark is on the east side and under the Routes 1 & 9 bridge over the Passaic River, between the fourth and fifth row of columns east of the river, in the most northerly row, 64.6 feet (19.7 m) north of the NE corner of the most southerly column of the fourth row, 41.9 feet (12.8 m) west of the NW corner of the fifth row, and 36.1 feet (11.0 m) east of the NE corner of the most northerly of the fourth row. The bench mark is crimped to a copper-coated steel rod driven 13.5 feet (4.1 m) to refusal, and encased in a PVC pipe and concrete kickblock.

## BENCH MARK STAMPING: 0743 C 1975

MONUMENTATION: Survey Disk  
 AGENCY/DISK TYPE: NOS Tidal Bench Mark  
 SETTING CLASSIFICATION: Copper-coated Steel Rod

The bench mark is on the east side of the Passaic River, 280.0 feet (85.3 m)

east of the east side of the underpass at Jacobus Avenue, under the north side of Routes 1 & 9, 74.5 feet (22.9 m) south of the SE corner of a one-story brick building, and 10.3 feet (3.1 m) SE of utility pole No. 3990. The bench mark is 0.2 foot (0.1 m) below ground level, crimped to a copper-coated steel rod driven 50.0 feet (15.2 m), and encased in a PVC pipe and concrete kickblock.

PUBLICATION DATE: 02/12/1985

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NEW JERSEY 853 0743

POINT NO POINT, PASSAIC RIVER

BENCH MARK STAMPING: 0743 D 1975

MONUMENTATION: Survey Disk

AGENCY/DISK TYPE: NOS Tidal Bench Mark

SETTING CLASSIFICATION: Copper-coated Steel Rod

The bench mark is on the east side and under the Routes 1 & 9 bridge over the Passaic River, 139.5 feet (42.5 m) NW of the SW corner of a one-story building in line with the second row of columns from the north side of the bridge, 27.0 feet (8.2 m) south of the south curb, and 12.0 feet (3.7 m) south of the chainlink fence in front of the Western Electric facility. The bench mark is 0.2 foot (0.1 m) below ground level, crimped to a copper-coated steel rod driven 50.0 feet (15.2 m), and encased in a PVC pipe and concrete kickblock.

BENCH MARK STAMPING: C 72 1965

MONUMENTATION: Survey Disk

AGENCY/DISK TYPE: USC&amp;GS Bench Mark

SETTING CLASSIFICATION: Concrete Abutment

The bench mark is in Kearny, near the intersection of Kearny and Jacobus Avenue, set vertically in the NE face of the SE abutment to Truck Routes 1 & 9 (also State Highway 25) bridge over the Passaic River, 2.0 feet (0.6 m) SE of the north corner of the abutment, 2.6 feet (0.8 m) above ground, and 3.5 feet (1.1 m) above the avenue surface.

BENCH MARK STAMPING: NO 4 1953

MONUMENTATION: Survey Disk

AGENCY/DISK TYPE: USC&amp;GS Bench Mark

SETTING CLASSIFICATION: Concrete Monument

The bench mark is at Kearny, 0.5 mile (0.8 km) NE along State Highway 25 from the police and fire station, in top of a 3x4 foot (1x1 m) concrete monument between the concrete retaining wall and an old bridge abutment, 12.0 feet (3.7 m) NW of a concrete retaining wall, 9.0 feet (2.7 m) SW of the NE edge of the abutment, and 3.0 feet (0.9 m) above ground level.

PUBLICATION DATE: 02/12/1985

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NEW JERSEY 853 0743

POINT NO POINT, PASSAIC RIVER

Tidal datums at POINT NO POINT, PASSAIC RIVER are based on the following:

LENGTH OF SERIES	= 11 MONTHS
TIME PERIOD	= JANUARY-NOVEMBER 1976
TIDAL EPOCH	= 1960-1978
CONTROL TIDE STATION	= THE BATTERY, NY (851 8750)

Elevations of tidal datums referred to mean lower low water (MLLW) are as follows:

HIGHEST OBSERVED WATER LEVEL (03/16/1976)	= 7.83 FEET
MEAN HIGHER HIGH WATER (MHHW)	= 5.81 FEET
MEAN HIGH WATER (MHW)	= 5.48 FEET
MEAN TIDE LEVEL (MTL)	= 2.86 FEET
*NATIONAL GEODETIC VERTICAL DATUM-1929 (NGVD)	= 2.07 FEET
MEAN LOW WATER (MLW)	= 0.24 FEET
MEAN LOWER LOW WATER (MLLW)	= 0.00 FEET
LOWEST OBSERVED WATER LEVEL (02/02/1976)	= -4.24 FEET

\*NGVD reference based on adjustment of 12/82 and NOS levels of 12/76.

Bench mark elevation information:

ELEVATION IN FEET ABOVE:		
BENCH MARK STAMPING	MLLW	MHW
0743 A 1975	11.11	5.63
0743 B 1975	9.70	4.22
0743 C 1975	10.80	5.32
0743 D 1975	12.00	6.52
C 72 1965	14.75	9.27
NO 4 1953	20.96	15.48

PUBLICATION DATE: 02/12/1985

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MSL is the local mean sea level and should not be confused with the fixed datums of NGVD (sometimes referred to as Sea Level Datum of 1929) or NAVD 88.

NGVD is a fixed datum adopted as a standard geodetic reference for heights. It was derived from a general adjustment of the first order leveling nets of the U.S. and Canada. Mean sea level was held fixed as observed at 26 stations in the U.S. and Canada. Numerous adjustments have been made since originally established in 1929.

NAVD 88 involved a simultaneous, least squares, minimum-constraint adjustment of Canadian-Mexican-United States leveling observations. Local mean sea level at Father Point/Rimouski, Canada was held fixed as the single constraint.

These fixed datums do not take into account the changing stands of sea level and because they represent a "best" fit over a broad area, their relationship to

local mean sea level is not consistent from one location to another.

**ATTACHMENT I**  
**NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION**  
**NATIONAL OCEAN SERVICE**  
**PASSAIC RIVER TIDAL DATUM**  
**POINT NO POINT**